## SEQUENCE LISTING

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<110> Vogeli, Gabriel
Wood, Linda S.
Merchant, Kalpana
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- < <120> G PROTEIN-COUPLED RECEPTORS EXPRESSED IN BRAIN
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- <150> US 09/481,794
- <151> 2000-01-12
  - <150> US 09/454,399
  - <151> 1999-12-03
  - <150> US 09/429,517
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  - <150> US 09/428,114
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|     | •                |                |           | ••        |                   |           |           |           |       |           |           |           |           |           |           |                                       |         |
|-----|------------------|----------------|-----------|-----------|-------------------|-----------|-----------|-----------|-------|-----------|-----------|-----------|-----------|-----------|-----------|---------------------------------------|---------|
|     |                  |                |           |           | gcc<br>Ala        |           |           |           |       |           |           |           |           |           |           |                                       | 750     |
|     |                  |                |           |           | atg<br>Met        |           |           |           |       |           |           |           |           |           |           |                                       | 798<br> |
|     |                  |                |           |           | tcc<br>Ser        |           |           |           |       |           |           |           |           |           |           |                                       | 846     |
|     |                  |                |           | Asp       | gct<br>Ala<br>235 |           |           |           |       |           | Asn       |           |           | Thr       |           | cac<br>His                            | 894     |
|     |                  |                | Āla       |           | gtt<br>Val        |           |           |           |       |           |           |           |           |           |           |                                       | 942     |
|     |                  |                |           |           | ggg               |           |           |           |       |           |           |           |           |           |           | att<br>Ile                            | 990     |
|     | Val              |                |           |           | tat<br>Tyr        |           |           |           |       |           |           |           |           |           |           |                                       | 1038    |
|     |                  |                |           |           | acc<br>Thr        |           |           |           |       |           |           |           |           |           |           |                                       | 1086    |
|     |                  |                |           | _         | gat<br>Asp<br>315 |           |           |           |       | _         | _         | tga       | atga      | acao      | ett       | · · · · · · · · · · · · · · · · · · · | 1132    |
| . , | gcca             | aggag          | gtg a     | gaag      | gagaa             | g ga      | aaga      | atta      | ctt   | ctat      | ttg       | ccto      | cttat     | gc a      | aggag     | gttcat                                | 1192    |
|     | aaaa             | atcti          | tc t      | ggaa      | agtac             | t gt      | atte      | gatca     | a caa | aatg      | ggag      | ţţţţ      | gntga     | act g     | ggtgo     | cattct                                | 1252    |
|     | caat             | aagt           | ac c      | ttgg      | ggaat             | c tr      | nacat     | cact      | gga   | aaggo     | ccca      | ccac      | catt      | ct a      | ataaa     | at                                    | 1308    |
|     | <210             | )> 2           | ,         |           |                   |           |           |           | · .   |           |           |           |           |           |           |                                       |         |
|     | <212             | l> 32<br>2> PF | TS.       | - 17      |                   |           | •         |           |       |           |           |           | . (       |           |           |                                       |         |
|     |                  | 3 > Hc         | omo s     | apie      | ens               |           |           |           |       |           |           |           |           |           |           |                                       | •       |
|     | <400<br>Met<br>1 | Leu            | Thr       | Leu       | Asn<br>5          | Lys       | Thr       | Asp       | Leu   | Ile<br>10 | Pro       | Ala       | Ser       | Phe       | Ile<br>15 | Leu                                   |         |
|     | .Asn             | Gly            | Val       | Pro<br>20 | Gly               | Leu       |           | Asp       |       | Gln       | Leu       | Trp       | Ile       | Ser<br>30 | Phe       | Pro                                   | ·.      |
|     | Phe              | Cys            | Ser<br>35 | Met       | Tyr               | Val       |           | Ala<br>40 | Met   | Val       | Gly       | Asn       | Cys<br>45 | Gly       | Leu       | Leu                                   |         |
|     | Tyr              | Leu<br>50      | Ile       | His       | Tyr               | Glu       | Asp<br>55 | Ala       | Leu   | His       | Lys       | Pro<br>60 | Met       | Tyr       | Tyr       | Phe                                   |         |
|     | Leu<br>65        | Ala            | Met       | Leu       | Ser               | Phe<br>70 | Thr       | Asp       | Leu   | Val       | Met<br>75 | Cys       | Ser       | Ser       | Thr       | Ile<br>80                             |         |
|     |                  |                |           |           |                   |           |           |           |       |           |           |           |           |           |           |                                       |         |

| Pro          | Lys                                 | Ala        | Leu        | Cys<br>85                                 | Ile        | Phe        | Trp        | Phe        | His<br>90  | Leu        | Lys        | Asp        | Ile        | Gly<br>95  | Phe .      | ٠,          |
|--------------|-------------------------------------|------------|------------|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|
| Asp          | Glu                                 | Cys        | Leu<br>100 | Val                                       | Gln        | Met        | Phe        | Phe<br>105 | Ile        | His        | Thr        | Phe        | Thr<br>110 | Gly        | Met        |             |
| Glu          | Ser                                 | Gly<br>115 | Val        | Leu                                       | Met        | Leu        | Met<br>120 | Ala        | Leu        | Asp        | Arg        | Tyr<br>125 | Val        | Ala        | Ile        |             |
|              | Tyr<br>130                          | Pro        | Leu        | Arg                                       | Tyr<br>·   | Ser<br>135 |            | Ile        | Leu        | Thr        | Asn<br>140 | Pro        | Val        | Ile        | Ala        | · · · · · · |
| Lys<br>145   | Val                                 | Gly        | Thr        | Ala                                       | Thr<br>150 | Phe        | Leu        | Arg        | Gly        | Val<br>155 | Leu        | Leu        | Ile        | Ile        | Pro<br>160 | 9           |
| Phe<br>,     | Thr                                 | Phe        | Leu        | Thr<br>165                                | Lys        | Arg        | Leu        | Pro        | Ser<br>170 | Cys        | Arg        | Gly        | Asn        | Ile<br>175 | Leu        |             |
| Pro          | His                                 | Thr        | Tyr<br>180 | Cys                                       | Asp        | His        | Met        | Ser<br>185 | Val        | Ala        | Lys        | Leu        | Ser<br>190 | Cys        | Gly        |             |
| Asn          | Val                                 | Lys<br>195 | Val        | Asn                                       | Ala        |            | Tyr<br>200 | Gly        | Leu        | Met        | Val        | Ala<br>205 |            | Leu        | Ile        |             |
| Gly          | Gly<br>210                          | Phe        | Asp        | Ile                                       | Leu        | Cys<br>215 | Ile        | Thr        | Ile        | Ser        | Tyr<br>220 | Thr        | Met        | Ile        | Leu        |             |
| Arg<br>225   | Ala                                 | Val        | Val        | Ser                                       | Leu<br>230 | Ser        | Ser        | Ala        | Asp        | Ala<br>235 | Arg        | Gln        | Lys        | Ala        | Phe<br>240 | * .         |
| Asn          | Thr                                 | Cys        | Thr        | Ala<br>245                                | His        | Ile        | Cys        | Ala        | Ile<br>250 | Val        | Phe        | Ser        | Tyr        | Thr<br>255 | Pro        |             |
| Ala          | Phe                                 | Phe        | Ser<br>260 | Phe                                       | Phe        | Ser        | His        | Arg<br>265 | Phe        | Gly        | Glu        | His        | Ile<br>270 | Ile        | Pro        |             |
| Pro          | Ser                                 | Cys<br>275 | His        | Ile                                       | Ile        | Val        | Ala<br>280 | Asn        | Ile        | Tyr        | Leu        | Leu<br>285 | Leu        | Pro        | Pro        |             |
|              | Met<br>290                          | Asn        | Pro        | Ile                                       | Val        | Tyr<br>295 | Gly        | Val        | Lys        | Thr        | Lys        | Gln        | Ile        | Arg        | Asp        |             |
| Cys<br>305   | Val                                 | Ile        | Arg        | Ile                                       | Leu<br>310 | Ser        | Gly        | Ser        | Lys        | Asp<br>315 | Thr        | Lys        | Ser        | Tyr        | Ser<br>320 |             |
| Met          | 4                                   |            |            |   |            |            |            |            |            | •          |            |            |            |            | (          |             |
| <21:<br><21: | 0 > 3<br>l > 10<br>2 > DN<br>3 > Ho | IA         | sapie      | eņs,                                      | , d.       |            |            |            | w e        |            |            |            | .0         |            |            |             |
|              | 0><br>1> CI<br>2> (1                |            | (1014      | 1)  |            |            | -          |            |            |            |            |            | *          |            | •          |             |
|              | 0 > 3                               |            |            | ,,<br>, , , , , , , , , , , , , , , , , , | 225        | ', ,       | 262        | ~+~        | + ~ +      | + å+       | ~~~        |            | +~~        | a - +      | ain a      | 4.0         |
|              | gat<br>Asp                          |            |            |   |            |            |            |            |            |            |            |            |            |            |            | 48          |

|            |                   |                   | gac<br>Asp<br>20  |             |            |                   |                   |            |            |            |                   |                   |            |            |            | 96  |
|------------|-------------------|-------------------|-------------------|-------------|------------|-------------------|-------------------|------------|------------|------------|-------------------|-------------------|------------|------------|------------|-----|
|            |                   |                   | gta<br>Val        |             |            |                   |                   |            |            |            |                   |                   |            |            |            | 144 |
|            |                   |                   | tat<br>Tyr        |             |            |                   |                   |            |            |            |                   | Tyr               |            |            |            | 192 |
|            |                   |                   | gca<br>Ala        |             |            |                   |                   |            |            |            |                   |                   |            |            |            | 240 |
|            |                   |                   | gtt<br>Val        |             |            |                   |                   |            |            |            |                   |                   |            |            |            | 288 |
|            |                   |                   | acc<br>Thr<br>100 |             |            |                   |                   |            |            |            |                   |                   |            | Ile        |            | 336 |
|            |                   |                   | gcc<br>Ala        |             |            | Phe               |                   |            |            |            |                   |                   |            |            |            | 384 |
| gtc<br>Val | cag<br>Gln<br>130 | aac<br>Asn        | att<br>Ile        | aat<br>.Asn | ttg<br>Leu | gtt<br>Val<br>135 | aca<br>Thr        | cag<br>Gln | aaa<br>Lys | aaa<br>Lys | gcc<br>Ala<br>140 | agg<br>Arg        | ttt<br>Phe | gtg<br>Val | tgt<br>Cys | 432 |
|            |                   |                   | tgg<br>Trp        |             |            | Val               |                   |            |            |            |                   |                   |            |            |            | 480 |
|            |                   |                   | caa<br>Gln        |             |            |                   |                   |            |            |            |                   |                   |            |            |            | 528 |
|            |                   |                   | aat<br>Asn<br>180 |             |            |                   |                   |            |            |            |                   |                   |            |            |            | 576 |
| tca<br>Ser | ttg<br>Leu        | ttt<br>Phe<br>195 | gtt<br>Val        | ggc<br>Gly  | ttt<br>Phe | atc<br>Ile        | atc<br>Ile<br>200 | cct<br>Pro | ttt<br>Phe | gtt<br>Val | att<br>Ile        | ata<br>Ile<br>205 | att<br>Ile | gtc<br>Val | tgt<br>Cys | 624 |
|            |                   |                   | atc<br>Ile        |             |            |                   |                   |            |            |            |                   |                   |            |            |            | 672 |
|            |                   |                   | cat<br>His        |             |            | Ala               |                   |            |            |            |                   |                   |            |            |            | 720 |
|            |                   |                   | gtc<br>Val        |             |            |                   |                   |            |            |            |                   |                   |            |            |            | 768 |
|            |                   |                   | tta<br>Leu<br>260 | His         |            |                   | Thr               |            |            |            |                   |                   |            |            |            | 816 |

|   | atg<br>Met | cag<br>Gln     | aag<br>Lys<br>275 | tcc<br>Ser | gtg<br>Val        | gtc<br>Val | ata<br>Ile        | acc<br>Thr<br>280 | Leu        | tct<br>Ser        | ctg<br>Leu | gct<br>Ala | gca<br>Ala<br>285 | tcc<br>Ser | aat<br>Asn        | tgt<br>Cys | 864  |
|---|------------|----------------|-------------------|------------|-------------------|------------|-------------------|-------------------|------------|-------------------|------------|------------|-------------------|------------|-------------------|------------|------|
|   |            |                |                   |            |                   |            | tat<br>Tyr<br>295 |                   |            |                   |            |            |                   |            |                   |            | 912  |
|   |            | Leu            |                   |            |                   |            | aag<br>Lys        |                   |            |                   |            |            |                   |            |                   |            | 960  |
|   | ccc<br>Pro | aga<br>Arg     | aag<br>Lys        | aag<br>Lys | gcc<br>Ala<br>325 | tct<br>Ser | ttg<br>Leu        | cca<br>Pro        | gaa<br>Glu | aaa<br>Lys<br>330 | Gly        | gaa<br>Glu | gaa<br>Glu        | ata<br>Ile | tgt<br>Cys<br>335 | aaa<br>Lys | 1008 |
|   | gta<br>Val | tag            | 9                 | ,          |                   |            |                   |                   |            |                   |            |            |                   |            |                   |            | 1014 |
|   | <212       | L> 33<br>2> PF | RT.               |            |                   | *          |                   |                   |            |                   | ·          |            |                   |            | *                 |            |      |
|   | <213       |                | omo s             | sapie      | ens               |            |                   |                   | ·,         | . •               |            |            |                   |            |                   |            |      |
|   |            |                | Glu               | Thr        | Gly<br>5          | Asn        | Leu               | Thr               | Val        | Ser<br>10         | Ser        | Ala        | Thr               | Cys        | His<br>15         | Asp        |      |
|   | Thr        | Ile            | Asp               | Asp<br>20  | Phe               | Arg        | Asn               | Glń               | Val<br>25  | Tyr               | Ser        | Thr        | Leu               | Tyr<br>30  | Ser               | Met        |      |
|   | Ile        | Ser            | Val<br>35         | Val        | Gly               | Phe        | Phe               | Gly<br>40         |            | Gly               | Phe        | Val        | Leu<br>45         | Tyr        | Val               | Leu        |      |
|   | Ile        | Lys<br>50      |                   | Tyr        | His               | Lys        | Lys<br>55         | Ser               | Ala        | Phe               | Gln        | Val<br>60  | Tyr               | Met        | Ile               | Asn        |      |
|   | Leu<br>65  |                | Val               | Ala        | Asp               | Leu<br>70  | Leu               | Cýs               | Val        | Cys               | Thr<br>75  | Leu        | Pro               | Leu        | Arg               | Val<br>80  |      |
|   | Val        | Tyr            | Tyr               | Val        | His<br>85         | Lys        | Gly               | Ile               | Trp        | Leu<br>90         | Phe        | Gly        | Asp               | Phe        | Leu<br>95         | Cys        | *    |
|   | Arg        | * .            |                   | Thr<br>100 |                   | Ala        | Leu               | Tyr               | Val<br>105 | Asn               | Leu        | Tyr        | Cys               | Ser<br>110 | Ile               | Phe        |      |
|   | Phe        | Met            | Thr<br>115        | Ala        | Met               | Ser        | Phe               | Phe<br>120        | Arg        | Сув               | Ile        | Ala        | Ile<br>125        | Val        | Phe               | Pro        |      |
|   |            | Gln<br>130     |                   |            |                   |            | Val<br>135        |                   |            |                   | Lys        | Ala<br>140 |                   | Phe        | Val               | Cys        |      |
|   | 145        | Gly            |                   | Trp        | Ile               | Phe<br>150 |                   | Ile               |            | Thr               | Ser<br>155 | Ser        | Pro               | Phe        | Leu               | Met<br>160 | ,    |
| 3 |            |                |                   | Gln        | Lys<br>165        | Asp        | Glu               |                   |            | Asn<br>170        | Thr        | Lys        | Cys               | Phe        | Glu<br>175        | Pro        |      |
|   | Pro        |                | Asp               | Asn<br>180 | Gln               | Thr        | Lys               | Asn               | His<br>185 | Val               | Leu        | Val        | Leu               | His<br>190 | Tyr               | Val        |      |

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Ser Leu Phe Val Gly Phe Ile Ile Pro Phe Val Ile Ile Val Cys
                            200
Tyr Thr Met Ile Ile Leu Thr Leu Leu Lys Lys Ser Met Lys Lys Asn
Leu Ser Ser His Lys Lys Ala Ile Gly Met Ile Met Val Val Thr Ala
Ala Phe Leu Val Ser Phe Met Pro Tyr His Ile Gln Arg Thr Ile His
                                     250
Leu His Phe Leu His Asn Glu Thr Lys Pro Cys Asp Ser Val Leu Arg
            260
                                 265
Met Gln Lys Ser Val Val Ile Thr Leu Ser Leu Ala Ala Ser Asn Cys
        275 \ .
                             280
Cys Phe Asp Pro Leu Leu Tyr Phe Phe Ser Gly Gly Asn Phe Arg Lys
                        295
Arg Leu Ser Thr Phe Arg Lys His Ser Leu Ser Ser Val Thr Tyr Val 305 310 315
Pro Arg Lys Lys Ala Ser Leu Pro Glu Lys Gly Glu Glu Ile Cys Lys
Val
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|   | ctto              | ctcto            | cag g      | gece       | atggo             | CC «Ca            | aagca            | agcco      | Met              |            |                   |                   |            | ı Let            |            | tct<br>Ser        | 714  |
|---|-------------------|------------------|------------|------------|-------------------|-------------------|------------------|------------|------------------|------------|-------------------|-------------------|------------|------------------|------------|-------------------|------|
|   |                   |                  |            |            | ctc<br>Leu        |                   |                  |            |                  |            |                   |                   |            |                  |            |                   | 762  |
| • |                   |                  |            |            | gct<br>Ala        |                   |                  |            |                  |            |                   |                   |            |                  |            |                   | 810  |
|   |                   |                  |            |            | cac<br>His<br>45  |                   |                  |            |                  |            |                   |                   |            |                  |            | ctg<br>Leu        | 858  |
|   | gca<br>Ala        | cca<br>Pro       | Ile        | Leu        | gcc<br>Ala        | Leu               | gag<br>Glu       | ttt<br>Phe | gtc<br>Val<br>65 | ctg<br>Leu | ggc<br>Gly        | ctg<br>Leu        | gtg<br>Val | 999<br>Gly<br>70 | aac<br>Asn | agt<br>Ser        | 906  |
|   | _                 | _                | 7          |            | atc<br>Ile        |                   | _                |            |                  | _          |                   |                   |            |                  |            |                   | 954  |
|   | acg<br>Thr        | gtg<br>Val<br>90 | ttc<br>Phe | ctg<br>Leu | gtc<br>Val        | agc<br>Ser        | ctg<br>Leu<br>95 | gtg<br>Val | gcc<br>Ala       | gct<br>Ala | gac<br>Asp        | ttc<br>Phe<br>100 | ctc<br>Leu | ctg<br>Leu       | atc<br>Ile | agc<br>Ser        | 1002 |
|   | aac<br>Asn<br>105 | ctg<br>Leu       | ccc<br>Pro | ctc<br>Leu | cgc<br>Arg        | gtg<br>Val<br>110 | gac<br>Asp       | tac<br>Tyr | tac<br>Tyr       | ctc<br>Leu | ctc<br>Leu<br>115 | cat<br>His        | gag<br>Glu | acc<br>Thr       | tgg<br>Trp | cgc<br>Arg<br>120 | 1050 |
|   |                   |                  |            |            | gcc<br>Ala<br>125 |                   |                  |            |                  |            |                   |                   |            |                  |            |                   | 1098 |
|   |                   |                  |            |            | gtt<br>Val        |                   |                  |            |                  |            |                   |                   |            |                  |            |                   | 1146 |
|   |                   |                  |            |            | cag<br>Gln        |                   |                  |            |                  |            |                   |                   |            |                  |            | gly<br>aaa        | 1194 |
|   |                   |                  |            |            | gtg<br>Val        |                   |                  |            |                  |            |                   |                   |            |                  |            |                   | 1242 |
|   |                   |                  |            |            | ctc<br>Leu        |                   | Ser              |            |                  |            |                   |                   |            |                  |            |                   | 1290 |
|   |                   |                  |            |            | acg<br>Thr<br>205 |                   |                  |            |                  |            |                   |                   |            |                  |            |                   | 1338 |
|   | _                 |                  | -          | _          | gag<br>Glu        |                   |                  |            |                  |            |                   |                   |            |                  |            | _                 | 1386 |

|    |            |            |            |                   |            |            |            |            |                   |            |            |            |            |                   | 999<br>Gly        |            | 1434 |
|----|------------|------------|------------|-------------------|------------|------------|------------|------------|-------------------|------------|------------|------------|------------|-------------------|-------------------|------------|------|
|    |            |            |            |                   |            |            |            |            |                   |            |            |            |            |                   | gcc<br>Ala        |            | 1482 |
|    |            |            |            |                   |            |            |            |            |                   |            |            |            |            |                   | tcc<br>Ser        |            | 1530 |
|    |            |            |            |                   |            |            |            |            |                   |            |            |            |            |                   | aca<br>Thr<br>295 |            | 1578 |
|    | ctc<br>Leu | ttc<br>Phe | cat<br>His | ggc<br>Gly<br>300 | tcc<br>Ser | ctg<br>Leu | gcc<br>Ala | ttc<br>Phe | acc<br>Thr<br>305 | tac<br>Tyr | ctc<br>Leu | aac<br>Asn | agt<br>Ser | gtc<br>Val<br>310 | ctg<br>Leu        | gac<br>Asp | 1626 |
| ,  |            |            |            | Tyr               |            |            |            |            |                   |            |            |            |            |                   | agc<br>Ser        |            | 1674 |
| ** |            |            | Leu        |                   |            |            |            |            |                   |            |            |            |            |                   | gac<br>Asp        |            | 1722 |
|    |            |            |            |                   |            |            |            |            |                   |            |            |            |            |                   | tct<br>Ser        |            | 1770 |
|    |            |            |            |                   |            |            |            |            |                   |            |            |            |            |                   | tct<br>Ser<br>375 | ctg<br>Leu | 1818 |
|    |            |            |            |                   |            |            |            | ggc<br>Gly |                   | ggg        | ccago      | ctg (      | caggg      | gctg              | ca                | * .        | 1865 |
|    | gcg        | tgtg       | aa a       | ggtaa             | iggg       | t go       | cgcg       | getet      | ggd               | cctgg      | gagg       | gaca       | aaggo      | ca q              | gcaca             | cggtg      | 1925 |
|    | cct        | caaco      | aa d       | etgga             | acaag      | gg ga      | tgg        | eggea      | a gad             | cago       | gggc       | cago       | gcca       | aag (             | cacto             | ggcagg     | 1985 |
|    | acto       | atgt       | gg g       | gtggd             | caggg      | ga ga      | agaaa      | accca      | a cct             | aggo       | cctc       | tcag       | gtgtg      | gtc (             | cagga             | atggca     | 2045 |
| -  | ttc        | caga       | iat s      | gcago             | ggag       | ga go      | cagga      | atgco      | ggg               | gtgga      | agga       | gaca       | aggca      | ag                | gtgc              | gttgg      | 2105 |
|    | caca       | accaś      | gct o      | cagad             | caggg      | gg co      | etge       | gcago      | tgo               | caggo      | ggac       | agad       | gcca       | at (              | cacto             | gtcaca     | 2165 |
|    | gcag       | gagto      | cac o      | cttag             | gäaat      | t gg       | gacag      | gctgo      | ato               | gtte       | gtg        | ctct       | ccag       | gtt 1             | tgtc              | ccttcc     | 2225 |
|    | aata       | attaa      | ata a      | actt              | ccct       | t t        | aaat       | catat      | tta               | attte      | gcag       | acca       | aatat      | ct                | gtctt             | taatt      | 2285 |
|    | ctaa       | accts      | ggg a      | actgt             | cagt       | a gg       | gegto      | caaag      | g tga             | agege      | ccc        | agt        | gaagg      | gaa (             | cctt              | ggagag     | 2345 |
|    | agtg       | ggag       | gca t      | tcc               | cagco      | et to      | ccag       | 9999       | a cto             | gtct       | tcc        | agad       | cttt       | ggą (             | gęcc              | gcatgt     | 2405 |
|    | ctg        | agca       | aga (      | ctctt             | tctt       | g gt       | ag         |            |                   |            |            |            |            |                   |                   |            | 2429 |

<210> 6 <211> 384 <212> PRT

<213> Homo sapiens

Val Leu Pro Pro Ser Phe Ser Pro Ser Pro Ser Ser Ala Pro Ser Ala 20 25 30

Phe Thr Thr Val Gly Gly Ser Ser Gly Gly Pro Cys His Pro Thr Ser 35 40 45

Ser Ser Leu Val Ser Ala Phe Leu Ala Pro Ile Leu Ala Leu Glu Phe 50 55 60

Val Leu Gly Leu Val Gly Asn Ser Leu Ala Leu Phe Ile Phe Cys Ile 65 70 75 80

His Thr Arg Pro Trp Thr Ser Asn Thr Val Phe Leu Val Ser Leu Val 85 90 95

Ala Ala Asp Phe Leu Leu Ile Ser Asn Leu Pro Leu Arg Val Asp Tyr 100 105 110

Tyr Leu Leu His Glu Thr Trp Arg Phe Gly Ala Ala Ala Cys Lys Val 115 120 125

Asn Leu Phe Met Leu Ser Thr Asn Arg Thr Ala Ser Val Val Phe Leu 130 135 140

Thr Ala Ile Ala Leu Asn Arg Tyr Leu Lys Val Val Gln Pro His His 145 150 155 160

Val Leu Ser Arg Ala Ser Val Gly Ala Ala Ala Arg Val Ala Gly Gly
165 170 175

Leu Trp Val Gly Ile Leu Leu Leu Asn Gly His Leu Leu Leu Ser Thr 180 185 190

Phe Ser Gly Pro Ser Cys Leu Ser Tyr Arg Val Gly Thr Lys Pro Ser 195 200 205

Ala Ser Leu Arg Trp His Gln Ala Leu Tyr Leu Leu Glu Phe Phe Leu 210 215 220

Pro Leu Ala Leu Ile Leu Phe Ala Ile Val Ser Ile Gly Leu Thr Ile 225 230 235 240

Arg Asn Arg Gly Leu Gly Gly Gln Ala Gly Pro Gln Arg Ala Met Arg 245 250 255

Val Leu Ala Met Val Val Ala Val Tyr Thr Ile Cys Phe Leu Pro Ser 260 265 270

Ile Ile Phe Gly Met Ala Ser Met Val Ala Phe Trp Leu Ser Ala Cys 275 280 285

Arg Ser Leu Asp Leu Cys Thr Gln Leu Phe His Gly Ser Leu Ala Phe 290 295 300

| Thr<br>305   | Tyr           | Leu        | Asn        | Ser        | Val<br>310 | Leu        | Asp        | Pro        | Val               | Leu<br>3·15 | Tyr        | Cys        | Phe        | Ser        | Ser<br>320 |     |
|--------------|---------------|------------|------------|------------|------------|------------|------------|------------|-------------------|-------------|------------|------------|------------|------------|------------|-----|
| Pro-         | Asn           | Phe        | Leu        | His<br>325 | Gln        | Ser        | Arg        | Ala        | Leu<br>330        | Leu         | Gly        | Leu        | Thr        | Arg<br>335 | Gly        |     |
| Arg          | Gln           | Gly        | Pro<br>340 | Val        | Ser        | Asp        |            | Ser<br>345 | Ser               | Tyr         | Gln        | Pro        | Ser<br>350 | Arg        | .Gln       |     |
| Trp          | Arg           | Tyr<br>355 | Arg        | Glu        | Ala        | Ser        | Arg<br>360 | Lys        | Ala               | Glu         | Ala        | Ile<br>365 | Gly        | Lys        | Leu        | •   |
| Lys          | Val<br>370    | Gln        | Gly        | Glu        | Val        | Ser<br>375 | Leu        | Glu        | Lys               | Glu         | Gly<br>380 | Ser        | Ser        | Gln        | Gly        |     |
| <212         | > 14<br>> DN  | IA.        | -          |            |            |            |            |            | •                 |             |            |            | 0          |            | , «        |     |
| <213         | i > H¢        | omo s      | sapıe      | ens        |            |            | •          |            |                   |             |            |            |            |            |            |     |
| <220         | ) >           |            |            |            |            |            |            | *          |                   |             |            |            |            | .00        |            |     |
|              | > CI<br>!> (] | os<br>(46) | (11        | L47)       |            |            |            |            |                   |             |            | ,          |            |            |            |     |
| <400<br>ttga |               | ag g       | gtgaç      | cacta      | ıt aç      | gaaga      | agcta      | ı tga      | acgțo             | cgca        | tgca       | acgcg      | gta d      | gtaa       | igctcg     | 60  |
|              |               |            |            |            |            | _          | _          |            |                   | -           | _          |            |            | , -        | gagtat     | 120 |
| cctc         | ccaa          | aag g      | gtgad      | cacto      | gg aa      | agca       |            |            | acc<br>Thr        |             |            |            |            |            |            | 172 |
|              |               |            |            |            |            |            |            |            | act<br>Thr        |             |            |            |            |            |            | 220 |
|              |               |            |            |            |            |            |            |            | ttg<br>Leu<br>35  |             |            |            |            |            |            | 268 |
|              |               |            |            |            |            |            |            |            | atc<br>Ile        |             |            |            |            |            |            | 316 |
|              |               |            |            |            |            |            |            |            | gcc<br>Ala        |             |            |            |            |            |            | 364 |
|              |               |            |            |            |            |            |            |            | tca<br>Ser        |             |            |            |            |            |            | 412 |
|              |               |            |            |            |            |            |            |            | tcg<br>Ser        |             |            |            |            |            |            | 460 |
|              |               |            |            |            | Val        |            |            |            | ctc<br>Leu<br>115 |             |            |            |            |            |            | 508 |
|              |               |            |            |            |            |            |            |            |                   |             |            |            |            |            |            |     |

|            |                   |                   |            |            |            |                   | aga<br>Arg        |            |            |            |                   |                   |            |            |            | 556  |
|------------|-------------------|-------------------|------------|------------|------------|-------------------|-------------------|------------|------------|------------|-------------------|-------------------|------------|------------|------------|------|
|            |                   |                   |            |            |            | Ile               | ttc<br>Phe<br>145 | Ile        |            |            |                   |                   |            |            |            | 604  |
|            |                   |                   |            |            |            |                   | agc<br>Ser        |            |            |            |                   |                   |            |            |            | 652  |
|            |                   |                   |            |            |            |                   | aag<br>Lys        |            |            |            |                   |                   |            |            |            | 700  |
|            |                   |                   |            |            |            |                   | cag<br>Gln        |            |            |            |                   |                   |            |            |            | 748  |
|            |                   |                   |            |            |            |                   | gtt<br>Val        |            |            |            |                   |                   |            |            |            | 796  |
|            |                   |                   |            |            |            |                   | gac<br>Asp<br>225 |            |            |            |                   |                   | Lys        |            | gaa<br>Glu | 844  |
| ggc<br>Gly | aaa<br>Lys<br>235 | Val               | ttt<br>Phe | gtt<br>Val | gtc<br>Val | gtg<br>Val<br>240 | gct<br>Ala        | gtc<br>Val | ttc<br>Phe | ttt<br>Phe | gtg<br>Val<br>245 | tgt<br>Cys        | ttt<br>Phe | gct<br>Ala | cca<br>Pro | 892  |
|            | His               |                   |            |            |            |                   | tat<br>Tyr        |            |            |            |                   |                   |            |            |            | 940  |
|            |                   |                   |            |            |            |                   | caa<br>Gln        |            |            |            |                   |                   |            |            |            | 988  |
|            |                   |                   |            |            |            |                   | att<br>Ile        |            |            |            |                   |                   |            |            |            | 1036 |
| ttc<br>Phe | tta<br>Leu        | tgt<br>Cys<br>300 | aaa<br>Lys | aaa<br>Lys | ttc<br>Phe | aca<br>Thr        | gaa<br>Glu<br>305 | aag<br>Lys | cta<br>Leu | cca<br>Pro | tgt<br>Cys        | atg<br>Met<br>310 | caa<br>Gln | ggg<br>Gly | aga<br>Arg | 1084 |
|            |                   |                   |            |            |            |                   | gaa<br>Glu        |            |            |            |                   |                   |            |            |            | 1132 |
|            | acc<br>Thr        |                   |            | tga        | caa        | ctgta             | aca t             | aggg       | gttaa      | ac tt      | ctai              | ttai              | t tga      | atgag      | gact       | 1187 |
| tcc        | gtaġa             | ata a             | atgt       | ggaaa      | at ca      | aaatt             | taad              | c caa      | agaa       | aaaa       | agat              | tgģ               | aac a      | aaatg      | gctctc     | 1247 |
| tta        | catt              | tta t             | ttai       | cct        | gg to      | gtcca             | aggaa             | a aag      | gatta      | atat       | taaa              | attta             | aaa 1      | ccad       | cataga     | 1307 |
| tct        | attca             | ata a             | agcto      | gaat       | ga a       | ccatt             | cacct             | aag        | gagaa      | atgc       | aaca              | aggat             | cac. o     | caato      | ggccac     | 1367 |
| tag        | aggiça            | ata t             | tccl       | tct        | ca it      | tttt              | tttt              | gtt        | caaat      | ttc        | aaga              | agcat             | tc a       | acttt      | acatt      | 1427 |

## tqqaaagact aaggggaacg gttatcctac aaacctccct tcaacacctt ttacatt

<210> 8 <211> 333 <212> PRT <213> Homo sapiens Met Asn Thr Thr Val Met Gln Gly Phe Asn Arg Ser Glu Arg Cys Pro Arg Asp Thr Arg Ile Val Gln Leu Val Phe Pro Ala Leu Tyr Thr Val Val Phe Leu Thr Gly Ile Leu Leu Asn Thr Leu Ala Leu Trp Val Phe Val His Ile Pro Ser Ser Ser Thr Phe Ile Île Tyr Leu Lys Asn Thr Leu Val Ala Asp Leu Ile Met Thr Leu Met Leu Pro Phe Lys Ile Leu Ser Asp Ser His Leu Ala Pro Trp Gln Leu Arg Ala Phe Val Cys Arg Phe Ser Ser Val Ile Phe Tyr Glu Thr Met Tyr Val Gly Ile Val Leu 100 Leu Gly Leu Ile Ala Phe Asp Arg Phe Leu Lys Ile Ile Arg Pro Leu Arg Asn Ile Phe Leu Lys Lys Pro Val Phe Ala Lys Thr Val Ser Ile 135 Phe Ile Trp Val Phe Leu Val Phe Ile Ser Leu Pro Asn Met Ile Leu 155 150 Ser Asn Lys Glu Ala Thr Pro Ser Ser Val Lys Lys Cys Ala Ser Leu 170 Lys Gly Pro Leu Gly Leu Lys Trp His Gln Met Val Asn Asn Ile Cys Gln Phe Ile Phe Trp Thr Gly Phe Ile Leu Met Leu Val Phe Tyr Val 200 Val Ile Ala Lys Lys Val Tyr Asp Ser Tyr Arg Lys Ser Lys Ser Lys Asp Arg Lys Asn Asn Lys Leu Glu Gly Lys Val Phe Val Val Ala Val Phe Phe Val Cys Phe Ala Pro Phe His Phe Ala Arg Val Pro 250 Tyr Thr His Ser Gln Thr Asn Asn Lys Thr Asp Cys Arg Leu Gln Asn

Gln Leu Phe Ile Ala Lys Glu Thr Thr Leu Phe Leu Ala Ala Thr Asn

| Ile Cys Me                                      | Asp Pro                      | Leu Ile<br>295            |                         | e Phe                | Leu Cy<br>30              |                           | s Phe Thr                 |       |
|---|------------------------------|---------------------------|-------------------------|----------------------|---------------------------|---------------------------|---------------------------|-------|
| Glu Lys Let<br>305                              | ı Pro Cys                    | Met Gln<br>310            | Gly Ai                  | g Lys                | Thr Th                    | r Ala Se                  | r Ser Glr<br>320          |       |
| Glu Asn Hi                                      | Ser Ser<br>325               |                           | Asp As                  | n Ile<br>330         | Thr Le                    | u Gly                     |                           |       |
| <210> 9<br><211> 957<br><212> DNA<br><213> Homo | sapiens                      |                           |                         | *                    |                           |                           | *                         | *     |
| <220><br><221> CDS<br><222> (1).                | (954)                        | *                         |                         |                      |                           | * **<br>.÷                | · ·                       |       |
| <400> 9<br>atg atg gto<br>Met Met Val           | gat ccc<br>Asp Pro           | aat ggc<br>Asn Gly        | aat ga<br>Asn Gl        | a tcc<br>u Ser<br>10 | agt gct<br>Ser Ala        | aca tac<br>Thr Tyr        | ttc atc<br>Phe Ile<br>15  | 48    |
| cta ata ggo<br>Leu Ile Gly                      | ctc cct<br>Leu Pro<br>20     | ggt tta<br>Gly Leu        | gaa ga<br>Glu Gl<br>2   | u Ala                | cag ttc<br>Gln Phe        | tgg ttg<br>Trp Leu<br>30  | Ala Phe                   | 96    |
| cca ttg tgo<br>Pro Leu Cys<br>35                | Ser Leu                      | tac ctt<br>Tyr Leu        | att gc<br>Ile Al<br>40  | t gtg<br>a Val       | cta ggt<br>Leu Gly        | aac ttg<br>Asn Leu<br>45  | aca atc<br>Thr Ile        | 144   |
| atc tac att<br>Ile Tyr Ile<br>50                |                              |                           |                         |                      |                           | Pro Met                   |                           | 192   |
| ttt ctt tgd<br>Phe Leu Cys<br>65                |                              |                           |                         |                      |                           |                           |                           | 240   |
| atg ccc aaa<br>Met Pro Lys                      | a atg ctg<br>s Met Leu<br>85 | gcc atc<br>Ala Ile        | ttc tg<br>Phe Tr        | g ttc<br>p Phe<br>90 | aat tcc<br>Asn Ser        | act acc<br>Thr Thr        | atc cag<br>Ile Gln<br>95  | 288   |
| ttt gat gct<br>Phe Asp Ala                      |                              | Leu Gln                   |                         | e Āla                |                           |                           | Ser Gly                   | 336   |
| atg gaa tco<br>Met Glu Sen<br>115               | Thr Val                      | ctg ctg<br>Leu Leu        | gcc at<br>Ala Me<br>120 | g gct<br>t Ala       | ttt gac<br>Phe Asp        | cgc tat<br>Arg Tyr<br>125 | gtg gcc<br>Val Ala        | 384   |
| atc tgt cad<br>Ile Cys His<br>130               |                              |                           |                         |                      |                           | Leu Pro                   |                           | 432   |
| acc aaa att<br>Thr Lys Ile<br>145               | ggt gtg<br>Gly Val           | gct gct<br>Ala Ala<br>150 | gtg gt<br>Val Va        | l Arg                | ggg gct<br>Gly Ala<br>155 | gca ctg<br>Ala Leu        | atg gca<br>Met Ala<br>160 | 480   |
| ccc ctt cct<br>Pro Leu Pro                      |                              |                           |                         |                      |                           |                           |                           | , 528 |

| Leu Ser His Ser Tyr Cys Leu His Gln Asp Val Met Lys Leu Ala Cys 180    gat gat atc cgg gtc aat gtc gtc tat ggc ctt atc gtc atc atc tcc Asp Asp Ile Arg Val Asn Val Val Tyr Gly Leu Ile Val Ile Ile Ser 195    gcc att ggc ctg gac tca ctt ctc atc tcc ttc tca tat ctg ctt att Ala Ile Gly Leu Asp Ser Leu Leu Ile Ser Phe Ser Tyr Leu Leu Ile 210    ctt aag act gtg ttg ggc ttg aca cgt gaa gcc cag gcc aag gca ttt Leu Lys Thr Val Leu Gly Leu Thr Arg Glu Ala Gln Ala Lys Ala Phe 230    ggc act tgc gtc tct cat gtg tgt gct gtg ttc ata ttc tat gta cct Gly Thr Cys Val Ser His Val Cys Ala Val Phe Ile Phe Tyr Val Pro 255    ttc att gga ttg tcc atg gtg cat cgc ttt agc aag cgg cgt gac tct Phe Ile Gly Leu Ser Met Val His Arg Phe Ser Lys Arg Arg Asp Ser 265    ccg ctg ccc gtc atc ttg gcc aat atc tat ctg ctg gtt cct cct gtg Rec Pro Leu Pro Val Ile Leu Ala Asn Ile Tyr Leu Leu Val Pro Pro Val 290    ctc aac cca att gtc tat gga gtg aag aca aag gag att cga cag cgc leu Asn Pro Ile Val Tyr Gly Val Lys Thr Lys Glu Ile Arg Gln Arg 290    get gat atc cgg ttg tat gag aca aag gag att cga cag cgc 91 gac tct and 190 |     |      |       |       |       |          |     |   |      |       |     |     |     |      |     |     |       |          |
|--|-----|------|-------|-------|-------|----------|-----|---|------|-------|-----|-----|-----|------|-----|-----|-------|----------|
| Asp Asp 11e Arg Val Asn Val Val Tyr Oly Leu Ile Val Ile Ile Ser 195  ged att ggc ctg gac tca ctt ctc atc tcc ttc tca tat ctg ctt att 210 C120 215 220 220 220 220 220 220 220 220 220 22   |     |      |       |       | Ser   |          |     |   |      | Gln   |     |     |     | Lys  | Leu |     |       | 576      |
| Ala Ile Gly Leu Asp Ser Leu Leu Ile Ser Phe Ser Tyr Leu Leu Ile 210  ctt aag act gtg ttg ggc ttg aca cgt gaa gcc cag gcc aag gca ttt Leu Lys Thr Val Leu Gly Leu Thr Arg Glu Ala Gln Ala Lys Ala Phe 220  ggc act tgc gtc tct cat gtg tgt gct gtg ttc ata ttc tat gta cct Gly Thr Cys Val Ser His Val Cys Ala Val Phe Ile Phe Tyr Val Pro 245  ttc att gga ttg tcc atg gtg cat cgc ttt agc acg cgt gac tct Phe Ile Gly Leu Ser Met Val His Arg Phe Ser Lys Arg Arg Asp Ser. 260  ccg ctg ccc gtc atc ttg gcc aat atc tat ctg ctg gtt cct cct gtg Pro Leu Pro Val Ile Leu Ala Asn Ile Tyr Leu Leu Val Pro Pro Val 275  ctc aac cca att gtc tat gga gtg aag aca aag gag att cga cag cgc tec aac cca att gtc tat gga gtg aag aca aag gag att cga cag cgc Leu Asn Pro Ile Val Tyr Gly Val Lys Thr Lys Glu Ile Arg Gln Arg 290  atc ctt caa cca att gtc tat gga gtg aag aca aag gag att cga cag cgc Leu Asn Pro Ile Val Tyr Gly Val Lys Thr Lys Glu Ile Arg Gln Arg 290  atc ctt caa ctt ttc cat gtg gcc aca cac gct tca gag ccc tag 11e Leu Arg Leu Phe His Val Ala Thr His Ala Ser Glu Pro 305  310  **210> 10  **2110> 316  **2212> PRT**  **2210> 10  * |     |      |       | Ile   |       |          |     |   | Val  |       |     |     |     | Val  |     |     |       | 624      |
| Leu Lys Thr Val Leu Gly Leu Thr Arg Glu Ala Gln Ala Lys Ala Phe 240  ggc act tgc gtc tct cat gtg tgt gct gtg ttc at attc tat gta cct Gly Thr Cys Val Ser His Val Cys Ala Val Phe Ile Phe Tyr Val Pro 245  ttc att gga ttg tcc atg gtg cat cgt gt tt agc aag cgg cgt gac tct Phe Ile Gly Leu Ser Met Val His Arg Phe Ser Lys Arg Arg Asp Ser 265  ccg ctg ccc gtc atc ttg gcc aat atc tat ctg ctg gtt cct cct gtg Pro Leu Pro Val Ile Leu Ala Asn Ile Tyr Leu Leu Val Pro Pro Val 275  ctc aac cca att gtc tat gga gtg aat atc tat ctg ctg gtt cct cct gtg Pro Leu Pro Val Ile Leu Ala Asn Ile Tyr Leu Leu Val Pro Pro Val 285  ctc aac cca att gtc tat gga gtg aag aca aag gag att cga cag cgc Leu Asn Pro Ile Val Tyr Gly Val Lys Thr Lys Glu Ile Arg Gln Arg 290  atc ctt cga ctt ttc cat gtg gcc aca cac cac gct tca gag ccc tag 300  atc ctt cga ctt ttc cat gtg gcc aca cac acc gct tca gag ccc tag 310  **Callo Not Arg Leu Phe His Val Ala Thr His Ala Ser Glu Pro 305  **Callo Not Arg Leu Pro Gly Leu Glu Glu Ser Ser Ala Thr Tyr Phe Ile 1  **Callo Not Ala Phe Ile Ala Val Leu Gly Asn Leu Thr Ile 40  Pro Leu Cys Ser Leu Tyr Leu Ile Ala Val Leu Gly Asn Leu Thr Ile 50  Phe Leu Cys Met Leu Ser Gly Ile Asp Ile Leu Ile Ser Thr Ser Ser 65  **Root Asp Ala Cys Leu Leu Gln Met Phe Ala Ile His Ser Leu Ser Gly  Phe Asp Ala Cys Leu Leu Gln Met Phe Ala Ile His Ser Leu Ser Gly  |     |      | Ile   |       |       |          |     | Leu                                     |      |       |     |     | Ser |      |     |     |       | 672      |
| Gly Thr Cys Val Ser His Val Cys Ala Val Phe Ile Phe Tyr Val Pro 255  ttc att gga ttg tcc atg gtg cat cgc ttt agc aag cgg cgt gac tct Phe Ile Gly Leu Ser Met Val His Arg Phe Ser Lys Arg Arg Asp Ser. 260  ccg ctg ccc gtc atc ttg gcc aat atc tat ctg ctg gtt cct cct gtg Pro Leu Pro Val Ile Leu Ala Asn Ile Tyr Leu Leu Val Pro Pro Val 275  ctc aac cca att gtc tat gga gtg aag aca aag gag att cga cag cgc Leu Asn Pro Ile Val Tyr Gly Val Lys Thr Lys Glu Ile Arg Gln Arg 290  atc ctt cga ctt ttc cat gtg gcc aca cac gct tca gag ccc tag 291  atc ctt cga ctt ttc cat gtg gcc aca cac gct tca gag ccc tag 310  atc ctt cga ctt ttc cat gtg gcc aca cac gct tca gag ccc tag 310  atc ctt cga ctt ttc cat gtg gcc aca cac gct tca gag ccc tag 310  atc ctt cga ctt ttc cat gtg gcc aca cac gct tca gag ccc tag 310  atc ctt cga ctt ttc cat gtg gcc aca cac gct tca gag ccc tag 310  atc ctt cga ctt ttc cat gtg gcc aca cac gct tca gag ccc tag 310  atc ctt cga ctt tcc cat gtg gcc aca cac gct tca gag ccc tag 310  atc ctt cga ctt ttc cat gtg gcc aca cac gct tca gag ccc tag 310  atc ctt cga ctt ttc cat gtg gcc aca cac gct tca gag ccc tag 310  atc ctt cga ctt tcc cat gtg gcc aca cac gct tca gag ccc tag 310  atc ctt cga ctt ttc cat gtg gcc aca cac gct tca gag ccc tag 310  atc ctt cga ctt ttc cat gtg gcc aca cac gct tca gag ccc tag 310  atc ctt cga ctt ttc cat gtg gcc aca cac gct tca gag ccc tag 310  atc ctt cga ctt ttc cat gtg gcc aca cac gct tca gag ccc tag 310  atc ctt cga ctt ttc cat gtg gcc aca cac gct tca gag ccc tag 310  atc ctt cga ctt ttc cat gtg gcc aca cac gct tca gag ccc tag 310  atc ctt cga ctt ttc cat gtg gcc aca cac gct tca gag ccc aca cac gct gct aca cac  |     | Leu' | Ĺys   |       |       |          | Gly |   |      |       |     | Ala |     |      |     |     | Phe   | 720      |
| Phe Ile Gly Leu Ser Met Val His Arg Phe Ser Lys Arg Arg Asp Ser. 260  Ccg ctg ccc ctc atc ttg gcc aat atc tat ctg ctg gtt cct cct gtg Pro Leu Pro Val Ile Leu Ala Asn Ile Tyr Leu Leu Val Pro Pro Val 285  Ctc aac cca att gtc tat gga gtg aag aca aag gag att cga cag cgc Leu Asn Pro Ile Val Tyr Gly Val Lys Thr Lys Glu Ile Arg Gln Arg 290  atc ctt cga ctt ttc cat gtg gcc aca cac gct tca gag ccc tag 290  atc ctt cga ctt ttc cat gtg gcc aca cac gct tca gag ccc tag 310  Ala Thr His Ala Ser Glu Pro 310  Ala Thr His Ala Ser Glu Pro 310  Ala Ser Ser Ala Thr Tyr Phe Ile 10  Cally 10  Ala Thr Met Val Asp Pro Asn Gly Asn Glu Ser Ser Ala Thr Tyr Phe Ile 10  Leu Ile Gly Leu Pro Gly Leu Glu Glu Ala Gln Phe Trp Leu Ala Phe 30  Pro Leu Cys Ser Leu Tyr Leu Ile Ala Val Leu Gly Asn Leu Thr Ile 35  Ala Thr Ile Val Arg Thr Glu His Ser Leu His Glu Pro Met Tyr Ile 50  Phe Leu Cys Met Leu Ser Gly Ile Asp Ile Leu Ile Ser Thr Ser Ser 65  Met Pro Lys Met Leu Ala Ile Phe Trp Phe Asn Ser Thr Thr Ile Gln 90  Phe Asp Ala Cys Leu Leu Gln Met Phe Ala Ile His Ser Leu Ser Gly  |     |      |       |       |       | Ser      |     |   |      |       | Val |     |     |      |     | Val |       | 768      |
| Pro Leu Pro Val Ile Leu Ala Asn Ile Tyr Leu Leu Val Pro Pro Val 285  ctc aac cca att gtc tat gga gtg aag aca aag gag att cga cag cgc Leu Asn Pro Ile Val Tyr Gly Val Lys Thr Lys Glu Ile Arg Gln Arg 300  atc ctt cga ctt ttc cat gtg gcc aca cac gct tca gag ccc tag 11e Leu Arg Leu Phe His Val Ala Thr His Ala Ser Glu Pro 305 <pre> </pre> <pre> <pre> <pre> </pre> <pre> <pre> </pre> <pre> <pre> <pre></pre></pre></pre></pre></pre></pre>   | 4.1 |      |       |       | Leu   |          |     |   |      | Arg   |     |     |     |      | Arg |     |       | 816      |
| Leu Asn Pro Ile Val Tyr Gly Val Lys Thr Lys Glu Ile Arg Gln Arg 295  atc ctt cga ctt ttc cat gtg gcc aca cac gct tca gag ccc tag 95  Ile Leu Arg Leu Phe His Val Ala Thr His Ala Ser Glu Pro 305  <210 > 10 <211 > 318 <212 > PRT <213 > Homo sapiens  <400 > 10  Met Met Val Asp Pro Asn Gly Asn Glu Ser Ser Ala Thr Tyr Phe Ile 1  1   |     |      |       | Pro   |       |          |     |   | Asn  |       |     |     |     | Val. |     |     |       | 864      |
| Tile Leu Arg Leu Phe His Val Ala Thr His Ala Ser Glu Pro 305 310 310 315 315 315 315 315 315 315 315 315 315   |     |      | Asn   |       |       |          | Tyr | Gly                                     |      |       |     |     | Glu |      |     |     |       | 912      |
| <pre>&lt;211&gt; 318 &lt;212&gt; PRT &lt;213&gt; Homo sapiens  &lt;400&gt; 10 Met Met Val Asp Pro Asn Gly Asn Glu Ser Ser Ala Thr Tyr Phe Ile</pre>  |     | Ile' |       |       |       |          | His |   |      |       |     | Ala |     |      |     | tag | Į ti  | 957<br>- |
| <pre>&lt;211&gt; 318 &lt;212&gt; PRT &lt;213&gt; Homo sapiens  &lt;400&gt; 10 Met Met Val Asp Pro Asn Gly Asn Glu Ser Ser Ala Thr Tyr Phe Ile</pre>  |     |      |       |       | ٠ ,   |          |     | ,                                       |      | •     | •   |     |     |      |     |     |       |          |
| <pre>&lt;212&gt; PRT &lt;213&gt; Homo sapiens &lt;400&gt; 10 Met Met Val Asp Pro Asn Gly Asn Glu Ser Ser Ala Thr Tyr Phe Ile</pre>   | -   | <210 | )> 10 |       |       |          |     | ÷ + + + + + + + + + + + + + + + + + + + |      |       |     |     |     | *    |     |     |       |          |
| <pre> &lt;400&gt; 10 Met Met Val Asp Pro Asn Gly Asn Glu Ser Ser Ala Thr Tyr Phe Ile 1</pre>   |     |      |       |       |       |          |     |   |      | γ · a |     | .*  |     |      |     |     |       |          |
| Met Met Val Asp Pro Asn Gly Asn Glu Ser Ser Ala Thr Tyr Phe Ile 1  |     | <213 | 3> Ho | omo s | sapie | ens      |     | -                                       |      |       |     |     | •   |      | *   |     |       |          |
| Leu Ile Gly Leu Pro Gly Leu Glu Glu Ala Gln Phe Trp Leu Ala Phe 20 Pro Leu Cys Ser Leu Tyr Leu Ile Ala Val Leu Gly Asn Leu Thr Ile 35 A0 Pro Leu Cys Ser Leu Tyr Leu Ile Ala Val Leu Gly Asn Leu Thr Ile 40 Pro Ile Tyr Ile Val Arg Thr Glu His Ser Leu His Glu Pro Met Tyr Ile 50 Fro Cys Met Leu Ser Gly Ile Asp Ile Leu Ile Ser Thr Ser Ser 70 Fro Re 80 Pro Lys Met Leu Ala Ile Phe Trp Phe Asn Ser Thr Thr Ile Gln 95 Phe Asp Ala Cys Leu Leu Gln Met Phe Ala Ile His Ser Leu Ser Gly   |     | <400 | )> 10 | ).    |       |          | ,   |   |      |       |     |     |     |      |     |     |       |          |
| Pro Leu Cys Ser Leu Tyr Leu Ile Ala Val Leu Gly Asn Leu Thr Ile  11e Tyr Ile Val Arg Thr Glu His Ser Leu His Glu Pro Met Tyr Ile 50 Phe Leu Cys Met Leu Ser Gly Ile Asp Ile Leu Ile Ser Thr Ser Ser 65 70 Phe Trp Phe Asn Ser Thr Thr Ile Gln 85 Phe Asp Ala Cys Leu Leu Gln Met Phe Ala Ile His Ser Leu Ser Gly   |     |      | Met   | Val   | Asp   | Pro<br>5 | Asn |   |      |       |     | Ser | Ala | Thr  | Tyr |     | Ile _ |          |
| Ile Tyr Ile Val Arg Thr Glu His Ser Leu His Glu Pro Met Tyr Ile 50 Phe Leu Cys Met Leu Ser Gly Ile Asp Ile Leu Ile Ser Thr Ser Ser 65 70 Phe Trp Phe Asn Ser Thr Thr Ile Gln 85 90 95  Phe Asp Ala Cys Leu Leu Gln Met Phe Ala Ile His Ser Leu Ser Gly   |     | Leu  | Ile   | Gly   | ^     |          | Gly | Leu                                     | Glu  |       | Ala | Gln | Phe | Trp  |     | Ala | Phe   |          |
| Phe Leu Cys Met Leu Ser Gly Ile Asp Ile Leu Ile Ser Thr Ser Ser 65 70 75 80  Met Pro Lys Met Leu Ala Ile Phe Trp Phe Asn Ser Thr Thr Ile Gln 90 95  Phe Asp Ala Cys Leu Leu Gln Met Phe Ala Ile His Ser Leu Ser Gly  |     | Pro  |       |       | Ser   | Leu      | Tyr | Leu                                     |      | Ala   | Val | Leu | Gly |      | Leu | Thr | Ile   |          |
| Met Pro Lys Met Leu Ala Ile Phe Trp Phe Asn Ser Thr Thr Ile Gln 85 90 95  Phe Asp Ala Cys Leu Leu Gln Met Phe Ala Ile His Ser Leu Ser Gly  |     | Ile  |       | Ile   | Val   | Arg      | Thr |   | Hiŝ  | Ser   | Leu | His |     | Pro  | Met | Tyr | Ile   |          |
| 90 95  Phe Asp Ala Cys Leu Leu Gln Met Phe Ala Ile His Ser Leu Ser Gly   |     |      | Leu   | Cys   | Met   | Leu      |     | Gly                                     | ·Ile | Asp   | Ile |     | Ile | Ser  | Thr | Ser |       |          |
|  |     | Met  | Pro   | Lys   | Met.  |          | Ala | Ile                                     | Phe  | Trp   |     | Asn | Ser | Thr  | Thr |     | Gln   |          |
|  |     | Phe  | Asp   | Ala   |       | Leu      | Leu | Gln                                     | Met  |       | Ala | Ile | His | Ser  |     | Ser | Gly   |          |

| , | Met          | Glu                              | Ser<br>115 | Thr        | Val        | Leu        | Leu        | Ala<br>120 | Met                      | Ala        | Phe        | Asp        | Arg<br>125 | Tyr        | Val        | Ala        | ••    |    |
|---|--------------|----------------------------------|------------|------------|------------|------------|------------|------------|--------------------------|------------|------------|------------|------------|------------|------------|------------|-------|----|
|   | Ile          | Cys<br>130                       | His        | Pro        | Leu        | Arg        | His<br>135 | Ala        | Thr                      | Val        | Leu        | Thr<br>140 | Leu        | Pro        | Arg        | Val        | · · · |    |
|   | Thr<br>145   | Lys                              | Ile        | Gly        | Val        | Ala<br>150 | Ala        | Val        | Val                      | Arg        | Gly<br>155 |            | Ala        | Leu        | Met        | Ala<br>160 |       |    |
|   | Pro          | Leu                              | Pro        | Val        | Phe<br>165 | Ile        | Lys        | Gln        | Leu                      | Pro<br>170 | Phe        | Cys        | Arg        | Ser        | Asn<br>175 | Ile        |       |    |
|   | Leu          | Ser                              | His        | Ser<br>180 | Tyr        | Cys        | Leu        | His        | Gl <sup>'</sup> n<br>185 | Asp        | Val        | Met        | Lys        | Leu<br>190 | Ala        | Cys        |       | .' |
|   | Asp          | Asp                              | 11e<br>195 | Arg        | Val        | Asn        |            | Val<br>200 | Tyr                      | Gly        | Leu        | Ile        | Val<br>205 | Ile        | Ile        | Ser        |       |    |
|   | Ala          | Ile<br>210                       | Gly        | Leu        | Asp        | Ser        | Leu<br>215 | Leu        | Ile                      | Ser        | Phe        | Ser<br>220 | Tyr        | Leu        | Leu        | Ile        |       |    |
|   | Leu<br>225   | Lys                              | Thr        | Val        | Leu        | Gly<br>230 |            | Thr        | Arg                      | Glu        | Ala<br>235 | Gln        | Ala        | Lys        | Ala        | Phe<br>240 |       |    |
|   | Gly          | Thr                              | Cys        | Val        | Ser<br>245 | His        | Val        | Cys        | Ala                      | Val<br>250 | Phe        | Ile        | Phe        | Tyr        | Val<br>255 | Pro        |       |    |
|   | Phe          | Ile                              | Gly        | Leu<br>260 | Ser        | Met        | Val        | His        | Arg<br>265               | Phe        | Ser        | Lys        | Arg        | Arg<br>270 | Asp        | Ser        |       |    |
|   | Pro          | Leu                              | Pro<br>275 | Val        | Ile        | Leu        | Ala        | Asn<br>280 | Ile                      | Tyr        | Leu        | Leu        | Val<br>285 | Pro        | Pro        | Val        |       |    |
|   | Leu          | Asn .<br>290                     | Pro        | Ile        | Val        | Tyr        | Gly<br>295 | Val        | Lys                      | Thr        | Lys        | Glu<br>300 | Ile        | Arg        | Gln        | Arg        |       |    |
|   | Ile<br>305   | Leu                              | Arg        | Leu        |            | His<br>310 | Val        | Ala        | Thr                      | His        | Ala<br>315 | Ser        | Glu        | Pro        |            |            | *     | *. |
|   | <211<br><212 | 0> 11<br>l> 99<br>2> DN<br>3> Ho | 95<br>JA   | sapie      | ens        |            |            | ÷ .e.,     |                          |            |            |            | ·          |            |            | v.         |       | €. |
|   |              | )><br>L> CI<br>2> (]             |            |            |            | * '        |            |            |                          |            |            | *          |            |            |            |            |       |    |
|   | atg          |                                  | agc        |            |            |            |            | gtg<br>Val |                          |            |            |            |            |            |            |            | 4     | 8  |
| , |              |                                  |            |            |            |            |            | cag<br>Gln |                          |            |            |            |            |            | Val        |            |       | 6  |
|   |              |                                  |            |            |            |            |            | cct<br>Pro |                          |            |            |            |            |            |            |            | 1     | 44 |
|   |              |                                  |            |            |            |            |            | aca<br>Thr |                          |            |            |            |            |            |            |            | 1     | 92 |
|   |              |                                  |            |            |            | ٠.         |            |            |                          |            |            |            |            |            |            |            |       |    |

|     |            |     |      |       |       |       |      | tac<br>Tyr        |      |       |       |       |      |            | 240      |
|-----|------------|-----|------|-------|-------|-------|------|-------------------|------|-------|-------|-------|------|------------|----------|
|     |            |     |      |       |       |       |      | aag<br>Lys        |      |       |       |       |      |            | 288      |
|     |            |     |      |       |       |       |      | cac<br>His<br>105 |      |       |       |       |      | gga<br>Gly | 336      |
|     |            |     |      |       |       |       |      | gac<br>Asp        |      |       |       |       |      |            | 384<br>: |
| Pro |            |     |      |       |       |       |      | aac<br>Asn        |      |       |       |       |      |            | 432      |
|     |            |     |      |       |       |       |      | ttt<br>Phe        |      |       |       |       |      |            | 480      |
|     |            |     |      |       |       |       |      | tgt<br>Cys        |      |       |       |       |      |            | 528      |
|     |            |     |      |       |       |       |      | atc<br>Ile<br>185 |      |       |       |       |      |            | 576      |
|     |            |     |      |       |       |       |      | ttc<br>Phe        |      |       |       |       |      |            | 624      |
|     |            |     |      |       |       |       |      | tcc<br>Ser        |      |       |       |       |      |            | 672      |
|     |            |     |      |       |       | Glu   |      | aaa<br>Lys        |      |       |       |       |      |            | 720      |
|     |            |     |      |       |       |       |      | ttc<br>Phe        |      |       |       |       |      |            | 768      |
|     | Tyr        | Thr |      | Pro   |       |       |      | ttc<br>Phe<br>265 |      |       |       |       |      |            | 816      |
|     |            |     |      |       |       |       |      | ttg<br>Leu        |      |       |       |       |      |            | 864      |
|     |            |     |      |       |       |       |      | tcc<br>Ser        |      |       |       |       |      | aag<br>Lys | 912      |
|     | ata<br>Ile |     | tgaa | iaaac | ggg ( | cgcaa | aaaa | aa aa             | aaga | aataa | a aaa | ataga | actg |            | 961      |

<210> 12 <211> 307 <212> PRT <213> Homo sapiens

<213> Hollo Sapiens

Ile Phe Tyr Phe Ile Ile Leu Pro Gly Asn Phe Leu Ile Ile Phe Thr

Ile Lys Ser Asp Pro Gly Leu Thr Ala Pro Leu Tyr Phe Phe Leu Gly

40

Asn Leu Ala Phe Leu Asp Ala Ser Tyr Ser Phe Ile Val Ala Pro Arg 65 70 75 80

Met Leu Val Asp Phe Leu Ser Ala Lys Lys Ile Ile Ser Tyr Arg Gly 85 90 95

Cys Ile Thr Gln Leu Phe Phe Leu His Phe Leu Gly Gly Glu Gly
100 105 110

Leu Leu Val Val Met Ala Phe Asp Arg Tyr Ile Ala Ile Cys Arg 115 120 125

Pro Leu His Tyr Pro Thr Val Met Asn Pro Arg Thr Cys Tyr Ala Met 130 135 140

Met Leu Ala Leu Trp Leu Gly Gly Phe Val His Ser Ile Ile Gln Val 145 150 155 160

Val Leu Ile Leu Arg Leu Pro Phe Cys Gly Pro Asn Gln Leu Asp Asn 165 170 175

Phe Phe Cys Asp Val Pro Gln Val Ile Lys Leu Ala Cys Thr Asp Thr 180 195 190

Phe Val Val Glu Leu Leu Met Val Phe Asn Ser Gly Leu Met Thr Leu 195 200 205

Leu Cys Phe Leu Gly Leu Leu Ala Ser Tyr Ala Val Ile Leu Cys Arg 210 215 220

Ile Arg Gly Ser Ser Ser Glu Ala Lys Asn Lys Ala Met Ser Thr Cys 225 230 235 240

Ile Thr His Île Ile Val Ile Phe Phe Met Phe Gly Pro Gly Ile Phe 245 250 255

Ile Tyr Thr Arg Pro Phe Arg Ala Phe Pro Ala Asp Lys Val Val Ser 260 265 270

Leu Phe His Thr Val Ile Phe Pro Leu Leu Asn Pro Val Ile Tyr Thr 275 280 285

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Leu Arg Asn Gln Glu Val Lys Ala Ser Met Lys Lys Val Phe Asn Lys
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                        295
His Ile Ala
305
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agaactgata ggtntttttt ttttttttt ttcagatatt ctgatggcaa aacaagtgga 120
agaaaagagg aaggatgact gcagatcaga tcagttetet ttgtggatta tattttcagt 180
aaaatgtatg gatctatctt ttccttgttc ttatatctag atcatgagac ttgactgagg 240
etgtateett atectecate catet atg geg aac tat age cat gea get gae
                             Met Ala Asn Tyr Ser His Ala Ala Asp
aac att ttg caa aat ctc tcg cct cta aca gcc ttt ctg aaa ctg act
                                                                     340
Asn Ile Leu Gln Asn Leu Ser Pro Leu Thr Ala Phe Leu Lys Leu Thr
 10
                      15
                                           20
tcc ttg ggt ttc ata ata gga gtc agc gtg gtg ggc aac ctc ctg atc
                                                                     388
Ser Leu Gly Phe Ile Ile Gly Val Ser Val Val Gly Asn Leu Leu Ile
                 3.0
tcc att ttg cta gtg aaa gat aag acc ttg cat aga gca cct tac tac
Ser Ile Leu Leu Val Lys Asp Lys Thr Leu His Arg Ala Pro Tyr Tyr
             45
                                  50
                                                      . 55
tto ctg ttg gat ctt tgc tgt tca gat atc ctc aga tct gca att tgt .
Phe Leu Leu Asp Leu Cys Cys Ser Asp Ile Leu Arg Ser Ala Ile Cys
                              65
tto oca tit gig tic aac tot gic aaa aat ggt tot acc igg act tat
                                                                     532
Phe Pro Phe Val Phe Asn Ser Val Lys Asn Gly Ser Thr Trp Thr Tyr
                          80
```

|            |                   |                   |            |            |            |                   |                   | gcc<br>Ala        |            |            |                    |                   |            |            |            | 580  |
|------------|-------------------|-------------------|------------|------------|------------|-------------------|-------------------|-------------------|------------|------------|--------------------|-------------------|------------|------------|------------|------|
|            |                   |                   |            |            |            |                   |                   | tgc<br>Cys        |            |            |                    |                   |            |            | Leu        | 628  |
|            |                   |                   |            |            |            |                   |                   | aca<br>Thr<br>130 |            |            |                    |                   |            |            |            | 676  |
|            |                   |                   |            |            |            |                   |                   | tgg<br>Trp        |            |            |                    |                   |            |            | gca<br>Ala | 724  |
| ttt<br>Phe | ccc<br>Pro<br>155 | ccg<br>Pro        | gtt<br>Val | tta<br>Leu | Asp        | gtg<br>Val<br>160 | ggc<br>Gly        | act<br>Thr        | tac<br>Tyr | tca<br>Ser | ttc<br>Phe<br>165. | Ile               | agg<br>Arg | gag<br>Glu | gaa<br>Glu | 772  |
|            |                   |                   |            |            |            | His               |                   | tcc<br>Ser        |            |            |                    |                   |            |            |            | 820  |
|            |                   |                   |            |            |            |                   |                   | atc<br>Ile        |            |            |                    |                   |            |            | gtc<br>Val | 868  |
|            |                   | Lys               |            | Ile        |            | Phe               |                   | cac<br>His<br>210 |            |            |                    |                   |            |            |            | 916  |
| gtc<br>Val | cag<br>Gln        | ttt<br>Phe<br>220 | gta<br>Val | gca<br>Ala | gca<br>Ala | gtc<br>Val        | agc<br>Ser<br>225 | cag<br>Gln        | aac<br>Asn | tgg<br>Trp | act<br>Thr         | ttt<br>Phe<br>230 | cat<br>His | ggt<br>Gly | cct<br>Pro | 964  |
|            | Ala               |                   |            |            |            |                   |                   | aat<br>Asn        |            |            |                    |                   |            |            |            | 1012 |
|            |                   |                   |            |            |            | Leu               |                   | ggc<br>Gly        |            |            |                    |                   |            |            |            | 1060 |
|            |                   | _                 | _          |            |            | _                 |                   | tta<br>Leu        | -          |            |                    |                   | _          |            |            | 1108 |
|            |                   |                   |            |            |            |                   |                   | atg<br>Met<br>290 |            |            |                    |                   |            |            |            | 1156 |
|            |                   |                   |            |            |            |                   |                   | tat<br>Tyr        |            |            |                    |                   |            |            |            | 1204 |
|            |                   |                   |            |            |            |                   | Leu               | aca<br>Thr        |            |            |                    |                   |            |            | ttt<br>Phe | 1252 |

|   |              |                                      |     | •          |            |     |     |            |                   |            |                   |       |     |            |            |            |      |
|---|--------------|--------------------------------------|-----|------------|------------|-----|-----|------------|-------------------|------------|-------------------|-------|-----|------------|------------|------------|------|
|   |              | Gln                                  |     |            |            |     |     |            |                   |            | att<br>Ile<br>340 |       |     |            |            |            | 1300 |
|   |              |                                      |     |            |            |     |     |            |                   |            | tac<br>Tyr        |       |     |            |            |            | 1348 |
|   |              |                                      |     |            |            |     |     | gtt<br>Val | ata<br>Ile<br>370 | tgag       | <b>3</b> 9        |       |     | * 1        | 10         | . 4        | 1380 |
|   | <211<br><212 | 0 > 14<br>L > 37<br>2 > PF<br>B > Ho | 70  | sapie      | ens        |     |     | •          |                   |            | ·<br>·            |       | . • |            |            |            |      |
|   |              |                                      |     | Tyr        | Ser<br>5   | His | Ala | Ala        | Asp               | Asn<br>10  | Ile               | Leu   | Gln | Asn        | Leu<br>15  | Ser        |      |
|   |              |                                      |     | 20         |            |     |     | , i        | 25                |            | Leu               |       |     | 30         |            |            |      |
| - |              |                                      | 35  | • , •      | -          | ٠.  |     | 40         |                   |            | Ile<br>Leu        | . : ` | 45  |            |            |            |      |
|   | Ser          | 50                                   |     |            |            |     | 55  |            |                   |            | Pro               | 60    |     |            |            |            |      |
|   | 65<br>Val    | Lys                                  | Asn | Gly        | Ser<br>85  |     | Trp | Thr        | Tyr               | Gly<br>90  | Thr               | Leu   | Thr | Cys        | Lys<br>95  |            | *    |
|   | Ile          | Ala                                  | Phe | Leu<br>100 | Gly        | val | Leu | Ser        | Cys<br>105        | Phe        | His               | Thr   | Ala | Phe<br>110 | Met        | Leu        | •    |
|   | ÷            |                                      | 115 | r ii s     |            |     |     | 120        |                   |            | Ile               |       | 125 |            |            |            |      |
|   |              | 130                                  | Θ   |            |            |     | 135 |            |                   |            | Leu               | 140   |     | ٠,         |            |            |      |
|   | 145<br>Gly   |                                      | Tyr | Ser        | Phe<br>165 | 150 |     | Glu        | Glu               | Asp<br>170 | 155<br>Gln        | Cys   | Thr | Phe        | Gln<br>175 | 160<br>His | w.   |
|   | Arg          | Ser                                  | Phe | Arg<br>180 | Ala        | Asn | Asp |            | Leu<br>185        | Gly        | Phe               | Met   | Leu | Leu<br>190 | Leu        | Ala        |      |
|   | 0            |                                      | 195 |            |            |     |     | 200        |                   |            | Leu               |       | 205 |            |            |            |      |
|   | * *          | 2.10                                 | ,   |            |            |     | 215 | -          |                   |            | Gln               | 220   |     |            | ٠          |            |      |
|   | 225          |                                      |     |            | -          | 230 |     | 4          |                   | ,          | 235               |       | 1   |            |            | 240        |      |

| •          |                   |                  |            |                  |            |            |                  |            |            |            |            |                  |            |            |            | •     |
|------------|-------------------|------------------|------------|------------------|------------|------------|------------------|------------|------------|------------|------------|------------------|------------|------------|------------|-------|
|            |                   |                  |            |                  | · ·        | · .        |                  |            | - 22 -     | • .        |            |                  |            |            |            |       |
| Ala        | Asn               | Trp              | Leu        | Ala<br>245       | Gly        | Phe        | Gly              | Arg        | Gly<br>250 | Pro        | Thr        | Pro              | Pro        | Thr<br>255 | Leu        |       |
| Leu        | Gl <sup>'</sup> y | Ile              | Arg<br>260 | Gln              | Asn        | Ala        | Asn              | Thr<br>265 | Thr        | Gly        | Arg        | Arg              | Arg<br>270 | Leu        | Leu        |       |
| Val        | Leu               | Asp<br>275       | Glu        | Phe              | Lys        | Met        | Glu<br>280       | Lys        | Arg        | Ile        | Ser        | Arg<br>285       | Met,       | Phe        | Tyr        |       |
| Ile        | Met<br>290        | Thr              | Phe        | Leu              | Phe        | Leu<br>295 | Thr              | Leu        | Trp        | Gly        | Pro<br>300 | Tyr              | Leu        | Val        | Ala        |       |
| Cys<br>305 | Tyr               | Trp              | Arg        | Val              | Phe<br>310 | Ala        | Arg              | Gly        | Pro        | Val<br>315 | Val        | Pro              | Gly        | Gly        | Phe<br>320 | •     |
| Leu        | Thr               | Ala              | Ala        | Val<br>325       | Trp        | Met        | Ser              | Phe        | Ala<br>330 |            | Ala        | Gly              | Ile        | Asn<br>335 | Pro        |       |
| Phe        | Val               | Cys              | Ile<br>340 | Phe              | Ser        | Asn        | Arg              | Glu<br>345 | Leu        | Arg        | Arg        | Cys              | Phe<br>350 | Ser        | Thr        |       |
| Thr        | Leu               | Leu<br>355       | _          | Cys              | Arg        | Lys        | Ser.<br>360      |            | Leu        | Pro        | Arg        | Glu<br>365       |            | Tyr        | Cys        |       |
|            | 11e<br>370        |                  |            |                  |            |            |                  |            |            | ,          |            |                  |            |            |            | • • • |
| <21        | 0> 15<br>l> 1     | 191              |            |                  |            | .190       |                  |            |            |            |            |                  |            |            |            |       |
| <213       |                   | NA<br>OMO S      | sapie      | ens              |            |            |                  |            | • •        | .*         |            |                  |            |            | .0         |       |
|            | l> CI             | os<br>L)         | (1188      | B)               | :          |            |                  |            | *          |            |            |                  |            |            | •          |       |
| -400       | 0> .19            |                  |            |                  |            |            |                  |            |            |            |            | •                |            |            |            |       |
| atg        | ttt<br>Phe        | aga              |            | ctt<br>Leu<br>5  |            |            |                  |            |            |            |            |                  |            |            |            | 48    |
|            |                   |                  |            | tat<br>Tyr       |            |            |                  |            |            |            |            |                  |            |            |            | 96    |
| gat<br>Asp | gga<br>Gly        | att<br>Ile<br>35 | tca<br>Ser | tct<br>Ser       | cta<br>Leu | gag<br>Glu | aat<br>Asn<br>40 | ctc<br>Leu | ttg<br>Leu | gca<br>Ala | agc<br>Ser | att<br>Ile<br>45 | att<br>Ile | cag<br>Gln | aga<br>Arg | 144   |
|            |                   | Ųal              |            | gtt<br>Val       |            |            | Āla              |            |            |            |            |                  |            |            |            | 192   |
|            |                   |                  |            | cga<br>Arg       |            |            |                  |            |            |            |            |                  |            |            |            | 240   |
|            |                   |                  |            | tct<br>Ser<br>85 |            |            |                  |            |            |            |            |                  |            |            | tat<br>Tyr | 288   |

|   | ٠.                | ÷.                |            |            | 1          | - 4               |                   |            |            |            |                   |                   |            |            |            |                   |       |
|---|-------------------|-------------------|------------|------------|------------|-------------------|-------------------|------------|------------|------------|-------------------|-------------------|------------|------------|------------|-------------------|-------|
|   |                   |                   |            |            |            |                   | ttt<br>Phe        |            |            |            |                   |                   |            |            |            |                   | 336   |
|   |                   |                   |            |            |            |                   | atg<br>Met        |            |            |            |                   |                   |            |            |            | gga<br>Gly        | 384   |
| • | tct<br>Ser        | ttg<br>Leu<br>130 | gcc<br>Ala | att<br>Ile | ctg<br>Leu | tcc<br>Ser        | aca<br>Thr<br>135 | gaa<br>Glu | gta<br>Val | tca<br>Ser | gtt<br>Val        | tta<br>Leu<br>140 | ctg<br>Leu | tta<br>Leu | aca<br>Thr | ttt<br>Phe        | 432   |
|   | ctg<br>Leu<br>145 | aca<br>Thr        | ttg<br>Leu | gaa<br>Glu | aaa<br>Lys | tac<br>Tyr<br>150 | atc<br>Ile        | tgc<br>Cys | att<br>Ile | gtc<br>Val | tat<br>Tyr<br>155 | cct<br>Pro        | ttt<br>Phe | aga<br>Arg | tgt<br>Cys | gtg<br>Val<br>160 | 480   |
|   |                   |                   |            |            |            |                   | aca<br>Thr        |            |            |            |                   |                   |            |            |            |                   | 528   |
|   |                   |                   | Phe        |            |            |                   | ttc<br>Phe        |            |            |            |                   |                   |            |            |            | ttc<br>Phe        | 576   |
| ٠ |                   |                   |            |            |            |                   | aat<br>Asn        |            |            |            |                   | Pro               |            |            |            | gaa<br>Glu        | 624   |
|   |                   |                   |            |            |            |                   | gcc<br>Ala<br>215 |            |            |            |                   |                   |            |            |            |                   | 672 . |
|   |                   |                   |            |            |            |                   | ttt<br>Phe        |            |            |            |                   |                   |            |            |            |                   | 720   |
|   |                   |                   |            |            |            |                   |                   |            |            |            |                   |                   |            |            |            | .cgg<br>Arg       | 768   |
|   |                   |                   |            |            |            |                   | atg<br>Met        |            |            |            |                   |                   |            |            |            |                   | 816   |
|   |                   |                   |            |            |            |                   | tgc<br>Cys        |            | Ile        |            |                   |                   |            |            |            | ttt<br>Phe        | 864   |
|   | ctt<br>Leu        | tca<br>Ser<br>290 | ctg<br>Leu | ctt<br>Leu | cag<br>Gln | gta<br>Val        | gaa<br>Glu<br>295 | ata<br>Ile | cca<br>Pro | ggt<br>Gly | acc<br>Thr        | ata<br>Ile<br>300 | acc<br>Thr | tct<br>Ser | tgg<br>Trp | gta<br>Val        | 912   |
|   | gtg<br>Val<br>305 | Ile               | ttt<br>Phe | att<br>Ile | ctg<br>Leu | ccc<br>Pro<br>310 | att<br>Ile        | aac<br>Asn | agt<br>Ser | gct<br>Ala | ttg<br>Leu<br>315 | aac<br>Asn        | cca<br>Pro | att<br>Ile | ctc<br>Leu | tat<br>Tyr<br>320 | 960   |
|   |                   |                   |            |            |            |                   | ttt<br>Phe        |            |            |            |                   |                   |            |            |            |                   | 1008  |
|   |                   |                   |            |            |            |                   | tct<br>Ser        |            |            |            |                   |                   |            |            |            |                   | 1056  |

|   |            |                   | ,          |   | -          |                   |                   |            | •          |            |            |                   |            |            |            |            |   |      |
|---|------------|-------------------|------------|---|------------|-------------------|-------------------|------------|------------|------------|------------|-------------------|------------|------------|------------|------------|---|------|
|   |            |                   |            | Phe                                     |            | tgg<br>Trp        |                   |            |            |            |            |                   |            |            |            |            |   | 1104 |
|   | cct<br>Pro | gag<br>Glu<br>370 | tta<br>Leu | atg<br>Met                              | aag<br>Lys | ccg<br>Pro        | gac<br>Asp<br>375 | ctt<br>Leu | ttc<br>Phe | aca<br>Thr | tac<br>Tyr | ccc<br>Pro<br>380 | tgt<br>Cys | gaa<br>Glu | atg<br>Met | tca<br>Ser |   | 1152 |
|   |            | Ile               |            |   |            | acg<br>Thr<br>390 |                   |            |            |            |            |                   | tga        | ٠.         |            |            |   | 1191 |
|   |            |                   |            |   |            |                   |                   |            |            |            |            |                   |            |            |            |            |   |      |
|   | <211       | )> 10<br>L> 3     | 96         | • |            |                   |                   |            |            | · .        | ,          |                   |            | ,          |            |            |   |      |
|   |            | 2> PI<br>3> Ha    | omo s      | sanie                                   | -ns        |                   |                   |            |            |            |            |                   |            | . , .      |            |            |   |      |
|   |            | · ·               | , ,        |   |            |                   |                   |            |            | 4          |            |                   |            |            |            |            |   |      |
|   |            | )> 10<br>Phe      |            | Pro                                     | Leu        | Val               | Asn               | Leu        | Ser        | His        | Ile        | Tyr               | Phe        | Lys        | Lys        | Phe        |   |      |
|   | 1          |                   |            |   | .5         |                   | , 5               | ٠          |            | 10         |            |                   |            |            | . 15       |            |   |      |
| • | dln        | -:<br>Turk        | Cyc        | Clar                                    | Tur        | Ala               | Dro               | uic        | U a I      | λra        | Car        | Čve               | Lvé        | Dro        | λan        | Thr        |   |      |
|   | GIII       | тут               | Çys        | 20                                      | туг        | vira.             | FIU               | nıs        | 25         | Arg        | Per        | Суз               | цуз        | 30         | L'SII      | 1111       |   |      |
|   |            |                   | 1 1-       |   | (:         |                   |                   |            | •          |            | _          | -                 |            |            |            |            | • |      |
|   | Asp        | Gly               | ·Ile<br>35 | Ser                                     | Ser        | Leu               | Glu               | Asn<br>40  | Leu        | Leu        | Ala        | Ser               | 11e.<br>45 | Ile        | Gln        | Arg        |   | •    |
|   | Val        | Phe<br>50         | Val        | Trp                                     | Val        | Val               | Ser<br>55         | Ala        | Val        | Thr        | Cys        | Phe 60            | Gly        | Asn        | Ile        | Phe        |   |      |
|   |            |                   |            | • • •                                   |            | ,                 |                   |            |            | •          |            |                   |            |            |            |            |   |      |
|   |            | Ile               | Cys        | Met                                     | Arg        | Pro               | Tyr               | Ile        | Arg        | Ser        |            | Asn               | Lys        | Leu        | Tyr        | Ala        |   |      |
|   | 65         |                   | *.         |   |            | 70                |                   |            |            | *          | 75         |                   | · .        | ٠,         |            | 80         | 9 |      |
|   | Met        | Ser               | Ile        | Ile                                     | Ser<br>85  | Leu               | Cys               | Cys        | Ala        | Asp<br>90  | Cys        | Leu               | Met        | Gly        | Ile<br>95  | Tyr        |   |      |
|   | Leu        | Phe               | Val        |   | Gly        | Gly               | Phe               | Asp        |            | Lys        | Phe        | Arg               | Gly        |            | Tyr        | Asn        |   |      |
|   |            |                   |            | 100                                     |            |                   |                   |            | 105        |            |            |                   |            | 110        |            | •          |   |      |
|   | Lys        |                   | Ala<br>115 | Gln                                     | Leu        | Trp               | Met               | Glu<br>120 | Ser        | Thr        | His        | Cys               | Gln<br>125 |            | Val        | Gly        | - |      |
|   | Ser        | İ.a.ı             | - הות      | Tle                                     | Leu        | car               | Thr               | Glu.       | Wal        | Ser        | Waj        | T.611             | Len        | T.A.I      | Thr        | Dhe        | * |      |
|   | ser        | 130               | Ala        | 116                                     | ьeu        | Ser               | 135               | GIU        | vai        | ser        | val        | 140               | ьец        | ьeu        | 1111       | Pile       |   |      |
|   | Leu        | Thr               | Leu        | Glu                                     | Lys        | Tyr               | Ile               | Cys        | Ile        | Val        | Tyr        | Pro               | Phe        | Arg        | Cys        | Val        |   |      |
|   | 145        | -                 |            |   |            | 150               |                   |            |            |            | 155        |                   |            |            |            | 160        |   |      |
|   | Ara        | Pro               | Glv        | Lvs                                     | Cvs        | Arg               | Thr               | Ile        | Thr        | Val        | Leu        | Ile               | Leu        | Ile        | Trp        | Ile        |   |      |
|   |            |                   |            | -                                       | 165        | 3                 |                   |            |            | 170        |            |                   |            |            | 175        |            |   |      |
|   | Thr        | Gly               | Phe        | Ile<br>180                              | Val        | Ala               | Phe               | Ile        | Pro        | Leu        | Ser        | Asn               | Lys        | Glu<br>190 | Phe        | Phe        |   |      |
|   |            |                   |            |   |            |                   |                   |            | ,          |            |            |                   | ÷          |            | • :        |            |   |      |
|   | Lys        | Asn               | Tyr<br>195 | Tyr                                     | Gly        | Thr               | Asn               | Gly<br>200 | Vál        | Cys        | Phe        | Pro               | Leu<br>205 | His        | Ser        | Glu        |   |      |
|   | Asn        | Thr               | G] 11      | Ser                                     | Ile        | Gly               | Ala               | Gln        | Ile        | Tvr        | Ser        | Val               | Ala        | Ile        | Phe        | Len        |   |      |
|   | v. P.D     | 210               |            |   |            | <b>○</b>          | 215               |            |            | - y -      | 201        | 220               |            |            | - 110      | u          |   |      |
|   | Ğlv        | Ile               | Asn        | Leu                                     | Ala        | Ala               | Phe               | Ile        | Ile        | Ile        | Val        | Phe               | Ser        | Tyr        | Gly        | Ser        |   |      |
|   | 225        |                   |            |   |            | 230               |                   |            |            | =.         | 235        |                   | ٠, .       |            | - 4        | 240        |   |      |
|   |            |                   |            |   |            |                   |                   |            |            |            |            |                   |            |            |            |            |   |      |

Met Phe Tyr Ser Val His Gln Ser Ala Ile Thr Ala Thr Glu Ile Arg 250 Asn Gln Val Lys Lys Glu Met Ile Leu Ala Lys Arg Phe Phe Phe Ile 265 Val Phe Thr Asp Ala Leu Cys Trp Ile Pro Ile Phe Val Val Lys Phe Leu Ser Leu Leu Gln Val Glu Ile Pro Gly Thr Ile Thr Ser Trp Val 295 Val Ile Phe île Leu Pro Ile Asn Ser Ala Leu Asn Pro Ile Leu Tyr 310 315 Thr Leu Thr Thr Arg Pro Phe Lys Glu Met Ile His Arg Phe Trp Tyr Asn Tyr Arg Gln Arg Lys Ser Met Asp Ser Lys Gly Gln Lys Thr Tyr 345 Ala Pro Ser Phe Ile Trp Val Glu Met Trp Pro Leu Gln Glu Met Pro 355 360 365 Pro Glu Leu Met Lys Pro Asp Leu Phe Thr Tyr Pro Cys Glu Met Ser 375 Leu Ile Ser Gln Ser Thr Arg Leu Asn Ser Tyr Ser 390 <210> 17 <211> 1164 <212> DNA <213> Homo sapiens <220> <221> CDS <222> (13)..(1089) cacaactgaa ga atg ggg ttc aac ttg acg ctt gca aaa tta cca aat aac 51 Met Gly Phe Asn Leu Thr Leu Ala Lys Leu Pro Asn Asn gag ctg cac ggc caa gag agt cac aat toa ggc aac agg agc gac ggg Glu Leu His Gly Gln Glu Ser His Asn Ser Gly Asn Arg Ser Asp Gly 15 20 . 25 cca gga aag aac acc ctt cac aat gaa ttt gac aca att gtc ttg Pro Gly Lys Asn Thr Thr Leu His Asn Glu Phe Asp Thr Ile Val Leu cca gtg ctt tat ctc att ata ttt gtg gca agc atc ttg ctg aat ggt 195 Pro Val Leu Tyr Leu Ile Ile Phe Val Ala Ser Ile Leu Leu Asn Gly tta gca gtg tgg atc ttc ttc cac att agg aat aaa acc agc ttc ata 243 Leu Ala Val Trp Ile Phe Phe His Ile Arg Asn Lys Thr Ser Phe Ile tto tat etc aaa aac ata gtg gtt gca gac etc ata atg acg etg aca 291 Phe Tyr Leu Lys Asn Ile Val Val Ala Asp Leu Ile Met Thr Leu Thr

| ,  |   |     |  |                   |   |   |     | 7 |     |     |     |      |
|----|---|-----|--|-------------------|---|---|-----|---|-----|-----|-----|------|
|    |   |     |  | cat<br>His<br>100 |   |   |     |   |     |     |     | 339  |
|    |   |     |  | tac<br>Tyr        |   |   |     |   |     |     |     | 3,87 |
|    |   |     |  | ctt<br>Leu        |   |   |     |   |     |     |     | 435  |
|    |   |     |  | G]A<br>333        |   |   |     |   |     |     |     | 483  |
| 6  |   |     |  | tgt<br>Cys        |   |   |     |   |     |     |     | 531  |
|    |   | Asn |  | aca<br>Thr<br>180 |   |   |     |   | Glu |     |     | 579  |
|    | _ | _   |  | aaa<br>Lys        | _ | _ |     | _ |     |     | _   | 627  |
|    |   |     |  | agc<br>Ser        |   |   |     |   |     |     | Ile | 675  |
|    |   |     |  | gcc<br>Ala        |   |   |     |   |     |     |     | 723  |
|    |   |     |  | tca               |   |   |     |   |     |     |     | 771  |
|    |   |     |  | gtg<br>Val<br>260 |   |   |     |   |     |     |     | 819  |
|    |   |     |  | act<br>Thr        |   |   |     |   |     | Leu |     | 867  |
|    |   |     |  | cta<br>Leu        |   |   | Lys |   |     |     |     | 915  |
|    |   |     |  | tgc<br>Cys        |   |   |     |   |     |     |     | 963  |
| ٠. |   |     |  | agg<br>Arg        |   |   |     |   |     |     |     | 1011 |
|    |   |     |  | tca<br>Ser<br>340 |   |   |     |   |     |     |     | 1059 |
|    |   |     |  |                   |   |   |     |   |     |     |     |      |

|              |                                      |             |            |            |            |            |            |            |            | •          |            |              |            |            |            |        |
|--------------|--------------------------------------|-------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|--------------|------------|------------|------------|--------|
|              |                                      |             |            |            |            | act<br>Thr |            |            | tag        | gcct       | ttta       | att <u>c</u> | gttt       | gttgg      | ga         | 1109   |
| atc          | gatat                                | igt a       | acaaa      | agtgt      | ca jaa     | ataaa      | atgtt      | t ct       | ettt       | catt       | áaaa       | aaaa         | aaa a      | aaaaa      | <b>a</b> , | 1164   |
| <211<br><212 | 0 > 18<br>1 > 35<br>2 > PI<br>3 > Ho | 8 8<br>RT   | sapiė      | ens        |            |            |            | · ·        |            |            |            |              |            | •          | . *        |        |
| <400         | ) > <b>1</b> 8                       | 3           |            |            |            |            | •          |            | 11         |            | •          |              |            |            |            | 1 8    |
|              | Gly                                  |             | Asn        | Leu<br>5   | Thr        | Leu        | Ala        | Lys        | Leu<br>10  | Pro        | Asn        | Asn          | Glu        | Leu<br>15  | His        | *      |
| Gly          | Gln                                  | Glu         | Ser<br>20  | His        | Asn        | Ser        | Gly        | Asn<br>25  | Arg        | Ser        | Asp        | Gly          | Pro<br>30  | Gly        | Lys        |        |
| Asn          | Thr                                  | Thr<br>35   | Leu        | His        | Asn        | Glu        | Phe 40     |            | Thr        | Ile        | Val        | Leu<br>45    | Pro        | Val        | Leu        |        |
| Tyr          | Leu<br>50                            | Ile         | Ile        | Phe        | Val        | Ala<br>55  | Ser        | Ile        | Leu        | Leu        | Asn<br>60  | Gly          | Leu        | Ala        | Val        |        |
| Trp<br>65    | Ile                                  | Phe         | Phe        | His        | Ile<br>70  | Arg        | Asn        | Lys        | Thr        | Ser<br>75  | Phe        | Ilė          | Phe        | Tyr        | Leu<br>80  | ·<br>} |
| Lys          | Asn                                  | Ile         | Val        | Val<br>85  | Ala        | Asp        | Leu        | Ile        | Met<br>90  | Thr        | Leü        | Thr          | Phe        | Pro<br>95  | Phe        |        |
| Arg          | Ile                                  |             | His<br>100 | Asp        | Ala        | Gly        | Pḥe        | Gly<br>105 | Pro        | Trp        | Tyr        | Phe          | Lys<br>110 | Phe        | Ile        |        |
| Leu          | Cys                                  | Arg.<br>115 | Tyr        | Thr        | Ser        | Val        | Leu<br>120 | Phe        | Tyr        | Ala        | Asn        | Met<br>125   | Tyr        | Thr        | Ser        |        |
|              | Val<br>130                           | Phe         | Leu        | Gly        | Leu        | Ile<br>135 | Ser        | Ile        | Asp        | Arg        | Tyr<br>140 | Leu          | Lys        | Val        | Val        | *      |
| Lys<br>145   | Pro                                  | Phe         | Gly        | Asp        | Ser<br>150 | Arg        | Met        | Tyr        | Ser        | Ile<br>155 | Thr        | Phe          | Thr        | Lys        | Val<br>160 | ÷      |
| Leu          | Ser                                  |             | Cys        |            |            | Val        |            | Met        | Ala<br>170 | Val        | Leu        | Ser          | Leu        | Pro<br>175 | Asn        |        |
| Ile          |                                      |             | Thr<br>180 |            | Gly        | Gln        | Pro        | Thr<br>185 | Glu        | Asp        | Asn        | Ile          | His<br>190 | Asp        | Cys        |        |
| <br>Ser      | Lys                                  | Leu<br>195  | Lys'       | Ser        | Pro        | Leu        | Gly<br>200 | Val        | Lys        | Trp        | His        | Thr<br>205   | Ala        | Val        | Thr        |        |
| Tyr          | Val<br>210                           | Asn         | Ser        | Сув        | Leu        | Phe<br>215 | Val        | Ala        |            | Leu        | Val<br>220 |              | Leu        | Ile        | Gly        |        |
| Cys<br>225   |                                      | Ile         |            | .Ile       | Ser<br>230 | Arg        | Tyr        | Ile        | His        | Lys<br>235 | Ser        | Ser          | Arg        | Gln        | Phe<br>240 | -      |
| Ile          | Ser                                  | Gln         | Ser        | Ser<br>245 | Arg        | rys        | Arg        | Lys        | His<br>250 | Asn        | Gln        | Ser          | lle        | Arg<br>255 | Val        |        |
| Val          | Val                                  | ·Ala        | Val<br>260 | Phe        | Phe        | Thr        | Cys        | Phe<br>265 | Leu        | Pro        | Tyr        | His          | Leu<br>270 | Cys        | Arg        |        |
|              |                                      |             |            |            |            |            |            |            |            |            |            |              |            |            |            |        |

|   |   |  | •  |   |  |  |  |  |   |  |  |  |  |   |   | *  |                          |
|---|---|--|--|---|--|--|--|--|---|--|--|--|--|---|---|--|--------------------------|
|   | Ile   | Pro  | Phe<br>275   | Thr   | Phe  | Ser  | His  | Leu<br>2,80  | Asp   | Arg  | Leu<br>,   | Leu<br>,   | Asp<br>285   | Glu   | Ser   | Ala  | -                        |
|   | Gln   | Lys<br>290   | Ile  | Leu   | Tyr  | Tyr  | Cys<br>295   | Lys  | Glu   | Ile  | Thr  | Leu<br>300   | Phe  | Leu   | Ser   | Ala  |                          |
|   | Cys<br>305  | Asn  | Val  | Суѕ   | Leu  | Asp<br>310   | Pro  | Ile  | Ile   | Tyr  | Phe<br>315   | Phe  | Met  | Cys   | Arg   | Ser<br>320   |                          |
| • | Phe   | Ser  | Arg  | Arg   | Leu<br>325   | Phe  | Lys  | Lys  | Ser   | Asn<br>330   | Ile  | Arg  | Thr  | Arg   | Ser<br>335  | Glu  | *                        |
|   | Ser   | Ile  | Arg  | Ser<br>340  | Leu  | Gln  | Ser  | Val  | Arg<br>345  | Arg  | Ser  | Glu  | Val  | Leu<br>350  | Ile   | Tyr  |                          |
|   | Tyr   | Asp  | Tyr<br>355   |   | Asp  | Val  |  |  |   | •  |  |  |  |   |   |  |                          |
|   | <211  | )> 19<br>L> 24<br>P> DN  | 80   |   |  |  |  |  |   | ٠  |  | :  |  |   | •   |  |                          |
|   |   |  |  | apie  | ens  |  |  |  |   |  |  |  |  |   |   | -  |                          |
|   |   |  |  |   |  |  |  |  | .,  |  |  |  |  |   |   |  |                          |
|   | <220  |  |  |   |  |  |  |  |   | •  |  |  |  |   |   |  |                          |
|   |   | L> CI  |  | / <b>-</b>  | \  |  |  | , , -  | . :   |  |  |  |  |   |   |  | · · · ·                  |
|   | <222  | 2> (4  | [2]  | (115  | ) / )  |  | •  |  |   |  |  |  |  |   |   |  |                          |
|   | -400  | )> 19  |  |   |  |  |  |  |   |  |  |  |  |   |   |  |                          |
|   | -   |  |  | cago  | ctac   | ic to  | ccaa   | it.ccc   | act   | ttac   | cac  | a at   | a tt   | a qo  | c aa  | ac ago   | 56                       |
|   |   |  |  |   | 100  |  |  |  |   |  |  |  |  |   |   | sn Ser   |                          |
|   |   |  |  | *, **   | Ŧ.,  |  |  |  |   |  |  |  | 1  | ٠.  |   | 5  |                          |
|   |   |  | 0  |   |  | i  |  |  |   |  |  |  |  |   |   |  | 104                      |
|   |   |  |  |   | Ser  |  |  |  |   |  |  |  |  |   |   | acc<br>Thr   | 104                      |
|   | Ser   | SEL  | TITT   | ASII  | 10   | DET  | vaı  | ьęи  | PIO   | 15   | PIO.   | Asp  | тут  | Arg   | 20  |  |                          |
|   |   |  | . ,  |   |  |  |  |  |   |  | . :  | **   | •  |   | 20  |  | •                        |
|   | cac   |  |  |   |  |  |  |  |   |  |  | cta  | act  | acċ   |   | - i -  | 152                      |
|   |   | cgc  | ctg  | cac   | ttg  | gtg  | gtc  | tac  | agc   | ttg  | gtg  | _  | acŕ  | 5   | 999   | CTC  | 152                      |
|   |   |  |  | His   | ttg<br>Leu   |  |  |  | Ser   |  |  |  |  | Ala   |   |  | 152                      |
|   |   |  |  |   |  |  |  |  |   |  |  |  |  |   |   |  | 152                      |
|   | His   | Arg  | Leu  | His<br>25   | Leu  | Val  | Val  | Tyr  | Ser<br>30   | Leu  | Val  | Leu  | Ala  | Ala<br>35   | Gly   | Leu  | *                        |
|   | His   | Arg  | Leu  | His<br>25<br>gcg  | Leu  | Val  | Val<br>ctc   | Tyr  | Ser<br>30<br>gtc  | Leu  | Val<br>ctg   | Leu  | Ala  | Ala<br>35<br>ctg  | Gly   | Leu  | 200                      |
|   | His   | Arg  | Leu  | His<br>25<br>gcg  | Leu  | Val  | Val<br>ctc   | Tyr  | Ser<br>30<br>gtc  | Leu  | Val<br>ctg   | Leu  | Ala  | Ala<br>35<br>ctg  | Gly   | Leu  | *                        |
|   | His<br>ccc<br>Pro                                   | Arg<br>ctc<br>Leu  | Leu<br>aac<br>Asn<br>40                                    | His<br>25<br>gcg<br>Ala                                 | Leu<br>cta<br>Leu  | Val<br>gcc<br>Ala  | Val<br>ctc<br>Leu  | Tyr<br>tgg<br>Trp<br>45  | Ser<br>30<br>gtc<br>Val   | Leu<br>ttc<br>Phe  | Val<br>ctg<br>Leu  | Leu<br>cgc<br>Arg  | Ala<br>gcg<br>Ala<br>50                                      | Ala<br>35<br>ctg<br>Leu   | Gly<br>cgc<br>Arg   | Leu<br>gtg<br>Val  | 200                      |
|   | His<br>ccc<br>Pro                                   | ctc<br>Leu   | aac<br>Asn<br>40   | His<br>25<br>gcg<br>Ala<br>gtg                          | Leu<br>cta<br>Leu  | yal<br>gcc<br>Ala<br>gtg                                   | Val<br>ctc<br>Leu  | tgg<br>Trp<br>45   | Ser<br>30<br>gtc<br>Val<br>tgt                                    | ttc<br>Phe<br>aac  | Val<br>ctg<br>Leu<br>ctg                                   | Leu<br>cgc<br>Arg  | Ala<br>gcg<br>Ala<br>50<br>gcc                               | Ala<br>35<br>ctg<br>Leu   | Gly<br>cgc<br>Arg   | gtg<br>Val   | *                        |
|   | His<br>ccc<br>Pro                                   | ctc<br>Leu<br>tcg<br>Ser   | aac<br>Asn<br>40   | His<br>25<br>gcg<br>Ala<br>gtg                          | Leu<br>cta<br>Leu  | yal<br>gcc<br>Ala<br>gtg                                   | val<br>ctc<br>Leu<br>tac<br>Tyr                            | tgg<br>Trp<br>45   | Ser<br>30<br>gtc<br>Val<br>tgt                                    | ttc<br>Phe<br>aac  | Val<br>ctg<br>Leu<br>ctg                                   | cgc<br>Arg<br>gcg<br>Ala                                   | Ala<br>gcg<br>Ala<br>50<br>gcc                               | Ala<br>35<br>ctg<br>Leu   | Gly<br>cgc<br>Arg   | gtg<br>Val   | 200                      |
|   | His<br>ccc<br>Pro                                   | ctc<br>Leu   | aac<br>Asn<br>40   | His<br>25<br>gcg<br>Ala<br>gtg                          | Leu<br>cta<br>Leu  | yal<br>gcc<br>Ala<br>gtg                                   | Val<br>ctc<br>Leu  | tgg<br>Trp<br>45   | Ser<br>30<br>gtc<br>Val<br>tgt                                    | ttc<br>Phe<br>aac  | Val<br>ctg<br>Leu<br>ctg                                   | Leu<br>cgc<br>Arg  | Ala<br>gcg<br>Ala<br>50<br>gcc                               | Ala<br>35<br>ctg<br>Leu   | Gly<br>cgc<br>Arg   | gtg<br>Val   | 200                      |
|   | His<br>ccc<br>Pro<br>cac<br>His                     | ctc<br>Leu<br>tcg<br>Ser<br>55   | aac<br>Asn<br>40<br>gtg<br>Val                             | His<br>25<br>gcg<br>Ala<br>gtg<br>Val                   | Leu<br>cta<br>Leu<br>agc<br>ser  | yal<br>gcc<br>Ala<br>gtg<br>Val                            | Ctc<br>Leu<br>tac<br>Tyr<br>60                             | tgg<br>Trp<br>45<br>atg<br>Met   | Ser<br>30<br>gtc<br>Val<br>tgt<br>Cys                             | ttc<br>Phe<br>aac<br>Asn                                   | Val<br>ctg<br>Leu<br>ctg<br>Leu                            | cgc<br>Arg<br>gcg<br>Ala<br>65                             | Ala gcg Ala 50 gcc Ala tac                                   | Ala<br>35<br>ctg<br>Leu<br>agc<br>Ser                             | Gly<br>cgc<br>Arg<br>gac<br>Asp   | gtg<br>Val<br>ctg<br>Leu                                   | 200                      |
|   | His<br>ccc<br>Pro<br>cac<br>His<br>ctc<br>Leu       | ctc<br>Leu<br>tcg<br>Ser<br>55   | aac<br>Asn<br>40<br>gtg<br>Val                             | His<br>25<br>gcg<br>Ala<br>gtg<br>Val                   | Leu<br>cta<br>Leu<br>agc<br>Ser  | yal<br>gcc<br>Ala<br>gtg<br>Val<br>ctg<br>Leu              | Ctc<br>Leu<br>tac<br>Tyr<br>60                             | tgg<br>Trp<br>45<br>atg<br>Met   | Ser<br>30<br>gtc<br>Val<br>tgt<br>Cys                             | ttc<br>Phe<br>aac<br>Asn                                   | ctg<br>Leu<br>ctg<br>Leu                                   | cgc<br>Arg<br>gcg<br>Ala<br>65                             | Ala gcg Ala 50 gcc Ala tac                                   | Ala<br>35<br>ctg<br>Leu<br>agc<br>Ser                             | Gly<br>cgc<br>Arg<br>gac<br>Asp   | gtg<br>Val<br>ctg<br>Leu<br>cac                            | 200                      |
|   | His<br>ccc<br>Pro<br>cac<br>His                     | ctc<br>Leu<br>tcg<br>Ser<br>55   | aac<br>Asn<br>40<br>gtg<br>Val                             | His<br>25<br>gcg<br>Ala<br>gtg<br>Val                   | Leu<br>cta<br>Leu<br>agc<br>ser  | yal<br>gcc<br>Ala<br>gtg<br>Val                            | Ctc<br>Leu<br>tac<br>Tyr<br>60                             | tgg<br>Trp<br>45<br>atg<br>Met   | Ser<br>30<br>gtc<br>Val<br>tgt<br>Cys                             | ttc<br>Phe<br>aac<br>Asn                                   | Val<br>ctg<br>Leu<br>ctg<br>Leu                            | cgc<br>Arg<br>gcg<br>Ala<br>65                             | Ala gcg Ala 50 gcc Ala tac                                   | Ala<br>35<br>ctg<br>Leu<br>agc<br>Ser                             | Gly<br>cgc<br>Arg<br>gac<br>Asp   | gtg<br>Val<br>ctg<br>Leu                                   | 200                      |
|   | His<br>ccc<br>Pro<br>cac<br>His<br>ctc<br>Leu<br>70 | ctc<br>Leu<br>tcg<br>Ser<br>55<br>ttc<br>Phe                             | aac<br>Asn<br>40<br>gtg<br>Val<br>acc                      | His<br>25<br>gcg<br>Ala<br>gtg<br>Val<br>ctc<br>Leu     | cta<br>Leu<br>agc<br>Ser<br>tcg  | gcc<br>Ala<br>gtg<br>Val<br>ctg<br>Leu<br>75               | Ctc<br>Leu<br>tac<br>Tyr<br>60<br>Ccc<br>Pro               | tgg<br>Trp<br>45<br>atg<br>Met   | Ser<br>30<br>gtc<br>Val<br>tgt<br>Cys                             | ttc<br>Phe<br>aac<br>Asn<br>ctc<br>Leu                     | ctg<br>Leu<br>ctg<br>Leu<br>tcc<br>Ser<br>80               | cgc<br>Arg<br>gcg<br>Ala<br>65<br>tac                      | gcg<br>Ala<br>50<br>gcc<br>Ala<br>tac<br>Tyr                 | Ala<br>35<br>ctg<br>Leu<br>agc<br>Ser<br>gca<br>Ala               | Cly<br>cgc<br>Arg<br>gac<br>Asp<br>ctg<br>Leu                             | gtg<br>Val<br>ctg<br>Leu<br>cac<br>His<br>85               | 200<br>248<br>296        |
|   | CCC Pro  Cac His  Ctc Leu 70  Cac                   | ctc<br>Leu<br>tcg<br>Ser<br>55<br>ttc<br>Phe                             | aac<br>Asn<br>40<br>gtg<br>Val<br>acc<br>Thr               | His<br>25<br>gcg<br>Ala<br>gtg<br>Val<br>ctc<br>Leu     | cta<br>Leu<br>agc<br>Ser<br>tcg  | yal gcc Ala gtg val ctg Leu 75                             | tac<br>Tyr<br>60<br>ccc<br>Pro                             | tgg<br>Trp<br>45<br>atg<br>Met<br>gtt<br>Val                             | Ser<br>30<br>gtc<br>Val<br>tgt<br>Cys<br>cgt<br>Arg               | ttc<br>Phe<br>aac<br>Asn<br>ctc<br>Leu                     | ctg<br>Leu<br>ctg<br>Leu<br>tcc<br>Ser<br>80               | cgc<br>Arg<br>gcg<br>Ala<br>65<br>tac<br>Tyr               | gcg<br>Ala<br>50<br>gcc<br>Ala<br>tac<br>Tyr                 | Ala<br>35<br>ctg<br>Leu<br>agc<br>Ser<br>gca<br>Ala               | cgc<br>Arg<br>gac<br>Asp<br>ctg<br>Leu                                    | gtg<br>Val<br>ctg<br>Leu<br>cac<br>His<br>85               | 200                      |
|   | CCC Pro  Cac His  Ctc Leu 70  Cac                   | ctc<br>Leu<br>tcg<br>Ser<br>55<br>ttc<br>Phe                             | aac<br>Asn<br>40<br>gtg<br>Val<br>acc<br>Thr               | His<br>25<br>gcg<br>Ala<br>gtg<br>Val<br>ctc<br>Leu     | Leu<br>cta<br>Leu<br>agc<br>Ser<br>tcg<br>Ser                            | yal gcc Ala gtg val ctg Leu 75                             | tac<br>Tyr<br>60<br>ccc<br>Pro                             | tgg<br>Trp<br>45<br>atg<br>Met<br>gtt<br>Val                             | Ser<br>30<br>gtc<br>Val<br>tgt<br>Cys<br>cgt<br>Arg               | ttc<br>Phe<br>aac<br>Asn<br>ctc<br>Leu                     | ctg<br>Leu<br>ctg<br>Leu<br>tcc<br>Ser<br>80               | cgc<br>Arg<br>gcg<br>Ala<br>65<br>tac<br>Tyr               | gcg<br>Ala<br>50<br>gcc<br>Ala<br>tac<br>Tyr                 | Ala<br>35<br>ctg<br>Leu<br>agc<br>Ser<br>gca<br>Ala               | cgc<br>Arg<br>gac<br>Asp<br>ctg<br>Leu                                    | gtg<br>Val<br>ctg<br>Leu<br>cac<br>His<br>85               | 200<br>248<br>296        |
|   | CCC Pro CAC His Ctc Leu 70 CAC His                  | ctc<br>Leu<br>tcg<br>Ser<br>55<br>ttc<br>Phe                             | aac<br>Asn<br>40<br>gtg<br>Val<br>acc<br>Thr               | His 25 gcg Ala gtg Val ctc Leu ttc Phe                  | cta<br>Leu<br>agc<br>Ser<br>tcg<br>Ser                                   | gcc<br>Ala<br>gtg<br>Val<br>ctg<br>Leu<br>75<br>gac<br>Asp | tac<br>Tyr<br>60<br>ccc<br>Pro                             | Tyr tgg Trp 45 atg Met gtt Val ctg Leu                                   | Ser<br>30<br>gtc<br>Val<br>tgt<br>Cys<br>cgt<br>Arg               | ttc<br>Phe<br>aac<br>Asn<br>ctc<br>Leu<br>cag<br>Gln<br>95 | ctg<br>Leu<br>ctg<br>Leu<br>tcc<br>Ser<br>80<br>acg<br>Thr | cgc<br>Arg<br>gcg<br>Ala<br>65<br>tac<br>Tyr               | Ala  gcg Ala 50  gcc Ala  tac Tyr  ggc Gly                   | Ala<br>35<br>ctg<br>Leu<br>agc<br>Ser<br>gca<br>Ala               | cgc<br>Arg<br>gac<br>Asp<br>ctg<br>Leu<br>atc<br>Ile<br>100               | gtg<br>Val<br>ctg<br>Leu<br>cac<br>His<br>85               | 200<br>248<br>296        |
|   | CCC Pro CAC His Ctc Leu 70 CAC His                  | ctc<br>Leu<br>tcg<br>Ser<br>55<br>ttc<br>Phe<br>tgg<br>Trp               | aac<br>Asn<br>40<br>gtg<br>Val<br>acc<br>Thr               | His 25 gcg Ala gtg Val ctc Leu ttc Phe atg              | cta<br>Leu<br>agc<br>Ser<br>tcg<br>Ser                                   | yal gcc Ala gtg Val ctg Leu 75 gac Asp                     | tac<br>Tyr<br>60<br>ccc<br>Pro                             | Tyr tgg Trp 45 atg Met gtt Val ctg Leu                                   | Ser<br>30<br>gtc<br>Val<br>tgt<br>Cys<br>cgt<br>Arg<br>tgc<br>Cys | ttc<br>Phe<br>aac<br>Asn<br>ctc<br>Leu<br>cag<br>Gln<br>95 | ctg<br>Leu<br>ctg<br>Leu<br>tcc<br>Ser<br>80<br>acg<br>Thr | cgc<br>Arg<br>gcg<br>Ala<br>65<br>tac<br>Tyr<br>acg<br>Thr | Ala  gcg Ala 50  gcc Ala  tac Tyr  ggc Gly ctc               | Ala<br>35<br>ctg<br>Leu<br>agc<br>Ser<br>gca<br>Ala<br>gcc<br>Ala | cgc<br>Arg<br>gac<br>Asp<br>ctg<br>Leu<br>atc<br>Ile<br>100               | gtg<br>Val<br>ctg<br>Leu<br>cac<br>His<br>85<br>ttc<br>Phe | 200<br>248<br>296        |
|   | CCC Pro CAC His Ctc Leu 70 CAC His                  | ctc<br>Leu<br>tcg<br>Ser<br>55<br>ttc<br>Phe<br>tgg<br>Trp               | aac<br>Asn<br>40<br>gtg<br>Val<br>acc<br>Thr               | His 25 gcg Ala gtg Val ctc Leu ttc Phe atg Met          | cta<br>Leu<br>agc<br>Ser<br>tcg<br>Ser                                   | yal gcc Ala gtg Val ctg Leu 75 gac Asp                     | tac<br>Tyr<br>60<br>ccc<br>Pro                             | Tyr tgg Trp 45 atg Met gtt Val ctg Leu                                   | Ser<br>30<br>gtc<br>Val<br>tgt<br>Cys<br>cgt<br>Arg<br>tgc<br>Cys | ttc<br>Phe<br>aac<br>Asn<br>ctc<br>Leu<br>cag<br>Gln<br>95 | ctg<br>Leu<br>ctg<br>Leu<br>tcc<br>Ser<br>80<br>acg<br>Thr | cgc<br>Arg<br>gcg<br>Ala<br>65<br>tac<br>Tyr<br>acg<br>Thr | Ala  gcg Ala 50  gcc Ala  tac Tyr  ggc Gly ctc               | Ala<br>35<br>ctg<br>Leu<br>agc<br>Ser<br>gca<br>Ala<br>gcc<br>Ala | cgc<br>Arg<br>gac<br>Asp<br>ctg<br>Leu<br>atc<br>Ile<br>100               | gtg<br>Val<br>ctg<br>Leu<br>cac<br>His<br>85<br>ttc<br>Phe | 200<br>248<br>296        |
|   | CCC Pro CAC His Ctc Leu 70 CAC His                  | ctc<br>Leu<br>tcg<br>Ser<br>55<br>ttc<br>Phe<br>tgg<br>Trp               | aac<br>Asn<br>40<br>gtg<br>Val<br>acc<br>Thr               | His 25 gcg Ala gtg Val ctc Leu ttc Phe atg              | cta<br>Leu<br>agc<br>Ser<br>tcg<br>Ser                                   | yal gcc Ala gtg Val ctg Leu 75 gac Asp                     | tac<br>Tyr<br>60<br>ccc<br>Pro                             | Tyr tgg Trp 45 atg Met gtt Val ctg Leu                                   | Ser<br>30<br>gtc<br>Val<br>tgt<br>Cys<br>cgt<br>Arg<br>tgc<br>Cys | ttc<br>Phe<br>aac<br>Asn<br>ctc<br>Leu<br>cag<br>Gln<br>95 | ctg<br>Leu<br>ctg<br>Leu<br>tcc<br>Ser<br>80<br>acg<br>Thr | cgc<br>Arg<br>gcg<br>Ala<br>65<br>tac<br>Tyr<br>acg<br>Thr | Ala  gcg Ala 50  gcc Ala  tac Tyr  ggc Gly ctc               | Ala<br>35<br>ctg<br>Leu<br>agc<br>Ser<br>gca<br>Ala<br>gcc<br>Ala | cgc<br>Arg<br>gac<br>Asp<br>ctg<br>Leu<br>atc<br>Ile<br>100               | gtg<br>Val<br>ctg<br>Leu<br>cac<br>His<br>85<br>ttc<br>Phe | 200<br>248<br>296        |
|   | CCC Pro Cac His Ctc Leu 70 Cac His                  | ctc<br>Leu<br>tcg<br>ser<br>55<br>ttc<br>Phe<br>tgg<br>Trp<br>atg<br>Met | aac<br>Asn<br>40<br>gtg<br>Val<br>acc<br>Thr<br>ccc<br>Pro | His 25 gcg Ala gtg Val ctc Leu ttc. Phe atg Met 105 gcc | cta<br>Leu<br>agc<br>Ser<br>tcg<br>Ser<br>ccc<br>Pro<br>90<br>tac<br>Tyr | gcc Ala gtg Val ctg Leu 75 gac Asp                         | ctc<br>Leu<br>tac<br>Tyr<br>60<br>ccc<br>Pro<br>ctc<br>Leu | tgg<br>Trp<br>45<br>atg<br>Met<br>gtt<br>Val<br>ctg<br>Leu<br>tgc<br>Cys | ser 30 gtc Val tgt Cys cgt Arg tgc Cys atc ile il0 ccg            | ttc<br>Phe aac Asn ctc Leu cag Gln 95 ttc Phe              | ctg<br>Leu<br>ctg<br>Leu<br>tcc<br>Ser<br>80<br>acg<br>Thr | cgc Arg gcg Ala 65 tac Tyr acg Thr atg Met                 | Ala  gcg Ala 50  gcc Ala  tac Tyr  ggc Gly ctc Leu  cgc      | Ala 35 ctg Leu agc ser gca Ala gcc Ala atc Ile 115 cac            | cgc<br>Arg<br>gac<br>Asp<br>ctg<br>Leu<br>atc<br>Ile<br>100<br>aac<br>Asn | Leu gtg Val ctg Leu cac His 85 ttc Phe gtg Val             | 200<br>248<br>296        |
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|   | CCC Pro Cac His Ctc Leu 70 Cac His                  | ctc<br>Leu<br>tcg<br>ser<br>55<br>ttc<br>Phe<br>tgg<br>Trp<br>atg<br>Met | aac<br>Asn<br>40<br>gtg<br>Val<br>acc<br>Thr<br>ccc<br>Pro | His 25 gcg Ala gtg Val ctc Leu ttc. Phe atg Met 105 gcc | cta<br>Leu<br>agc<br>Ser<br>tcg<br>Ser<br>ccc<br>Pro<br>90<br>tac<br>Tyr | gcc Ala gtg Val ctg Leu 75 gac Asp                         | ctc<br>Leu<br>tac<br>Tyr<br>60<br>ccc<br>Pro<br>ctc<br>Leu | tgg<br>Trp<br>45<br>atg<br>Met<br>gtt<br>Val<br>ctg<br>Leu<br>tgc<br>Cys | ser 30 gtc Val tgt Cys cgt Arg tgc Cys atc ile il0 ccg            | ttc<br>Phe aac Asn ctc Leu cag Gln 95 ttc Phe              | ctg<br>Leu<br>ctg<br>Leu<br>tcc<br>Ser<br>80<br>acg<br>Thr | cgc Arg gcg Ala 65 tac Tyr acg Thr atg Met                 | Ala  gcg Ala 50  gcc Ala  tac Tyr  ggc Gly ctc Leu  cgc      | Ala 35 ctg Leu agc ser gca Ala gcc Ala atc Ile 115 cac            | cgc<br>Arg<br>gac<br>Asp<br>ctg<br>Leu<br>atc<br>Ile<br>100<br>aac<br>Asn | Leu gtg Val ctg Leu cac His 85 ttc Phe gtg Val             | 200<br>248<br>296<br>344 |

|            |                   |       |            |            |            |                   |                   |            |            |            |                   |            | •          |            |            |      |  |
|------------|-------------------|-------|------------|------------|------------|-------------------|-------------------|------------|------------|------------|-------------------|------------|------------|------------|------------|------|--|
| cgg<br>Arg | ccc<br>Pro<br>135 | Arg   | gtg<br>Val | gcg<br>Ala | Arg.       | ctg<br>Leu<br>140 | ctc<br>Leu        | tgc<br>Cys | ctg<br>Leu | ggc<br>Gly | gtg<br>Val<br>145 | tgg<br>Trp | gcg<br>Ala | ctc<br>Leu | atc<br>Ile | 488  |  |
|            |                   |       |            |            |            |                   | gcc<br>Ala        |            |            |            |                   |            |            |            |            | 536  |  |
|            |                   |       |            |            |            |                   | cgc<br>Ārg        |            |            |            |                   |            |            |            |            | 584  |  |
|            |                   |       |            |            |            |                   | ctg<br>Leu        |            |            |            |                   |            |            |            |            | 632  |  |
|            |                   |       |            |            |            |                   | gcg<br>Ala<br>205 |            |            |            |                   |            |            |            |            | 680  |  |
|            |                   |       |            |            |            |                   | ccc<br>Pro        |            |            |            |                   |            |            |            | cgg<br>Arg | 728  |  |
|            |                   |       |            |            |            |                   | ctg<br>Leu        |            |            |            |                   |            |            |            |            | 776  |  |
|            |                   |       |            |            | Asn        |                   | acg<br>Thr        |            |            |            |                   |            |            |            |            | 824  |  |
|            |                   |       |            |            |            |                   | gtg<br>Val        |            |            |            |                   |            |            |            |            | 872  |  |
|            |                   |       |            |            |            |                   | ctg<br>Leu<br>285 |            |            |            |                   |            |            |            |            | 920  |  |
| ccg<br>Pro | ctg<br>Leu<br>295 | Val   | tac<br>Tyr | tac<br>Tyr | ttt<br>Phe | agc<br>Ser<br>300 | gcc<br>Ala        | gag<br>Glu | ggc<br>Gly | ttc<br>Phe | cgc<br>Arg<br>305 | aac<br>Asn | acc<br>Thr | ctg<br>Leu | cgc<br>Arg | 968  |  |
|            |                   |       |            |            |            |                   | gcc<br>Ala        |            |            |            |                   |            |            |            |            | 1016 |  |
|            |                   |       |            |            |            |                   | gaa<br>Glu        |            |            |            |                   |            |            |            |            | 1064 |  |
|            |                   |       |            | Ala        |            |                   | cag<br>Gln        |            |            |            |                   |            |            |            |            | 1112 |  |
|            | Ser               |       |            |            |            | Thr               | cag<br>Gln<br>365 |            |            |            |                   |            |            |            |            | 1157 |  |
| tgaa       | caca              | aca t | gcca       | attgo      | cg ct      | gtc               | gtg               | c cc       | gacto      | ccca'      | acġ               | cctc       | cg         | ttate      | ggagg      | 1217 |  |
| ctta       | cago              | ggt g | gtaca      | acaca      | aa ga      | aaggt             | ggg               | tgg        | ggcad      | cttg       | gáco              | etttg      | 999 1      | tggca      | aattcc     | 1277 |  |
|            |                   |       |            |            |            |                   |                   |            |            |            |                   |            |            |            |            |      |  |

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Arg Ala Leu Arg Val His Ser Val Val Ser Val Tyr Met Cys Asn Leu 50 60

Ala Ala Ser Asp Leu Leu Phe Thr Leu Ser Leu Pro Val Arg Leu Ser 65 70 75 80

Tyr Tyr Ala Leu His His Trp Pro Phe Pro Asp Leu Leu Cys Gln Thr 85 90 95

Thr Gly Ala Ile Phe Gln Met Asn Met Tyr Gly Ser Cys Ile Phe Leu 100 105 110

Met Leu Ile Asn Val Asp Arg Tyr Ala Ala Ile Val His Pro Leu Arg 115 120 125

Leu Arg His Leu Arg Arg Pro Arg Val Ala Arg Leu Leu Cys Leu Gly
130 140

-Val Trp Ala Leu Ile Leu Val Phe Ala Val Pro Ala Ala Arg Val His 145 150 150 160

Arg Pro Ser Arg Cys Arg Tyr Arg Asp Leu Glu Val Arg Leu Cys Phe 165 170 175

Glu Ser Phe Ser Asp Glu Leu Trp Lys Gly Arg Leu Leu Pro Leu Val 180 185

Leu Leu Ala Glu Ala Leu Gly Phe Leu Leu Pro Leu Ala Ala Val Val

Tyr Ser Ser Gly Arg Val Phe Trp Thr Leu Ala Arg Pro Asp Ala Thr 210 215 220

Gln Ser Gln Arg Arg Lys Thr Val Arg Leu Leu Leu Ala Asn Leu 225 230 235 240

Val Ile Phe Leu Leu Cys Phe Val Pro Tyr Asn Ser Thr Leu Ala Val 245 250 255

Tyr Gly Leu Leu Arg Ser Lys Leu Val Ala Ala Ser Val Pro Ala Arg 260 265 270

Asp Arg Val Arg Gly Val Leu Met Val Met Val Leu Leu Ala Gly Ala 275 280 285

Asn Cys Val Leu Asp Pro Leu Val Tyr Tyr Phe Ser Ala Glu Gly Phe 290 295 300

Arg Asn Thr Leu Arg Gly Leu Gly Thr Pro His Arg Ala Arg Thr Ser 305 310 315

Ala Thr Asn Gly Thr Arg Ala Ala Leu Ala Gln Ser Glu Arg Ser Ala , 325 330 335

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| <400>   | 38   |  |     |
|   | atatt tttctaaaaa aacctgtttt tgcaaaaacg g   | <b>a</b> .                             | 41  |
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|----|----------------|---|---|---------------------------------------|---------------------------------------|--------|-------------|------|-------|
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|    | <400>          | 48<br>gatcc atgg                        | aaaaca aaa                              | acad .                                |                                       |        | 7 8 .       | 11   | 27    |
|    | 54205          | , |   |                                       | •                                     |        |             | 0.00 |       |
|    |                | *                                       |   | *.,                                   | * .                                   |        |             | •    |       |
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|    | 12.5           |   | - bodaciio                              |                                       | <b>+</b>                              |        | • •         | •    |       |
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|    |                |   | , |                                       | , , , , , , , , , , , , , , , , , , , |        |             |      |       |
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|    |                | atto ttot                               | acttca tca                              | atcctcc                               |                                       |        | • *         |      | . 29  |
|    | J J            | -                                       |   |                                       |                                       |        |             |      |       |
|    |                | _:_                                     | . **                                    |                                       |                                       |        |             |      |       |
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|    | <220>          | Doggwinti                               | on of Anti                              | ficial                                | Comionae                              | Dwimow | T 141 2 0 7 | :    |       |
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|    |                | gatee aaag                              | gccatc aca                              | acaag                                 |                                       |        | •           |      | 28    |
|    | •              |   |   |                                       |                                       |        |             |      |       |
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|    | <220>          | Docarinti                               | on of Arti                              | ficial                                | Seguence                              | Drimor | CVÉOO       |      |       |
|    | <423>          | Description                             | OI OF WEET                              | rricial                               | sequence:                             | trimet | G V D D D   |      |       |
| ٠, | <400>          | 52                                      |   |                                       |                                       |        |             |      |       |
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|                                     |   | ) ·       | •          |               | •  |     |     |
| 0.7.0                               | 3   | 1         |            |               |    |     |     |
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| aagcg                               | 66<br>gtacc atgttagcca acageteete   |           | Primer     | LW1448        |    |     | 30  |
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